R8750-2028A

Population Bulletin

Delayed Childbearing in the U.S.: Facts and Fictions

By Wendy H. Baldwin and Christine Winquist Nord

A publication of the Population
Reference Bureau, Inc.
Vol. 39, No. 4
November 1984

ISSN 0032-468X

Abstract—Between 1970 and 1982, the proportion of first births in the U.S. to women 25 and older rose from 19 to 36 percent and the proportion of women still childless at ages 25-34 increased by 56 percent at about the same time. Although a sharp contrast with the baby boom era of the 1950s and 1960s, today's "epidemic" of delayed childbearing is similar to patterns earlier in the 20th century. As then, much is due to delayed marriage, but baby boomers now in their late twenties and early thirties are also delaying childbirth after marriage. The trend stems in part from their economic difficulties as they compete in a tight job market caused both by their large numbers and a turbulent economy. But it is also related to women's increasing education and, in turn, increasing opportunities in and commitment to the labor force, which can be expected to encourage delayed childbearing even after prospects brighten for young people. Although a diverse group, most of today's delayed childbearers are white, highly educated, two-career couples. Adequate daytime care for preschool children is a prime concern. Although more employers now offer child-care assistance and flexible work schedules to working parents, the juggle between jobs and childraising can be a strain. On the plus side are delayed childbearers' greater maturity and generally higher incomes, which can ease potential problems created by parent-child age differences as their children grow up. Businesses have been quick to respond to the new market of older, affluent, first-time mothers. New methods of treating or circumventing infertility and prenatal detection of chromosomal birth defects can now help overcome potential biological problems that may concern women who choose to delay childbearing past age 30.

Editor: Jean van der Tak Graphics: George Hager

The *Population Bulletin* is published four times a year and is distributed along with other publications listed on the back cover to members of the Population Reference Bureau. If you would like to order additional copies of this *Bulletin* or join the PRB if you are not already a member, write the Circulation Department, Population Reference Bureau, Inc., 2213 M Street N.W., Washington, DC 20037; Telephone: (202) 785-4664. Prices for the *Population Bulletin* are: $4.00 per single copy; bulk copies; 2-10, $3.00 each; 11-50, $2.50 each; 51 or more, $2.00 each. *Inside the United States*, add $1.00 for handling. *Outside the United States*, add 25 percent to the cost of *Bulletins* ordered to cover postage and handling. Annual rates for Population Reference Bureau membership *inside the United States* are: individuals, $30; educators, $20; associate educator members, $10; students, $10; libraries, $40; corporations and institutions, $200. *For all other countries*, the rates are: individuals, $37.50; educators, $25; associate educator members, $12.50; students, $12.50; libraries, $50; corporations and institutions, $250.

For information on other recent *Population Bulletins* and *Bulletin Slides*, see page 43.

The suggested citation, if you quote from this publication, is: Wendy H. Baldwin and Christine Winquist Nord, "Delayed Childbearing in the U.S.: Facts and Fictions," *Population Bulletin*, Vol. 39, No. 4 (Population Reference Bureau, Inc.: Washington, DC, 1984). The figures and tables from this *Population Bulletin* may be freely reproduced, provided credit is given to the Population Reference Bureau and a copy of the publication in which they appear is forwarded to the PRB.

The *Population Bulletin* is indexed in *GEO Abstracts, Population Index, Social Sciences Index,* and *Social Sciences Citation Index.* It is included in the coverage of *Current Contents/Social and Behavioral Sciences,* Biosciences Information Service of Biological Abstracts and the CICRED/UNFPA *Review of Population Reviews,* and is available on microfilm from Xerox University Microfilms, 300 North Zeeb, Ann Arbor, MI 48106. Selected *Bulletins* are also included in the coverage of and available in microfiche through ERIC Systems.

Delayed Childbearing in the U.S.: Facts and Fictions

By Wendy H. Baldwin and Christine Winquist Nord

Page
Introduction 3
What Is Delayed Childbearing? 5
How Widespread and How Unusual 6
Why Do Couples Delay Childbearing? 14
Medical and Health Issues 23
Delayed Childbearing and Family Life 30
Delayed Childbearing and Society 35
International Comparisons 36
The Future 37
References 38
Selected Bibliography 41

Figures
1. Percent of Women Still Childless at Ages 25-29 and 30-34: 1917-1981 8
2. First Birth Rates by Ages 25, 30, and 45 of Women Born 1900-1955 9
3. First Birth Rates at Ages 25, 30, and 35 of Women Born 1905-1955 11
4. Percent of Black and White Women Born 1940-1954 Who Were Mothers by Age 25 and Age 30, by Education 14
5. Labor Force Participation Rates of Married Women, by Presence and Age of Children: 1950-1984 18
6. Child-Care Arrangements for Youngest Child Under Age 5 of Married Mothers Working Full Time, by Ages of Mother and Child: 1982 20
7. Percent of Women Conceiving Within One Year with Artificial and Natural Insemination, and Percent of Women Potentially Fertile, by Age 24
8. Incidence of Major Birth Defects by Mother's Age: Atlanta, 1968-1975 26
9. Adoptions in the U.S.: 1951-1975 29

Tables
1. First Births to U.S. Women: 1970 and 1982 6
2. Total Births and First Births to Women Age 25 and Over: 1950, 1960, 1970, 1980 7
3. Percent of Black and White Women Born 1940-1954 Who Were Mothers by Age 25 and Age 30 13
4. Percent of Women and Men Never Married, by Age: 1890-1983 15
5. Timing of First Birth After Marriage: 1940-1979 16
6. Occupation of Married White Women Having a First Birth in 1980 17
7. Child-Care Arrangements for Youngest Child Under Age 5 of Married Mothers Working Full Time: 1982 19
8. Projected Mean Age at First Birth and Percent Who Will Be Childless of Women Born in 1950: U.S. and Five European Countries 36

Photo credits: Joe Beasley, 2, 35; D. H. Futrell, 32; Carl Haub, 21; Koehne Studio, 12

POPULATION BULLETIN
Vol. 39, No. 4, November 1984

ALL DELIVERIES
IN REAR

Delayed Childbearing in the U.S.: Facts and Fictions

By **Wendy H. Baldwin** and **Christine Winquist Nord**

Center for Population Research
National Institute of Child Health
and Human Development

Wendy Baldwin is chief of the Demographic and Behavioral Sciences Branch of the Center for Population Research, National Institute of Child Health and Human Development, National Institutes of Health, and is responsible for a grant and contract research program. Her interests include adolescent fertility and the role of child care in the relationship between fertility and women's employment. She wrote the Population Bulletin *"Adolescent Pregnancy and Childbearing" (Vol. 31, No. 2) and has testified before Congressional committees and serves on a National Academy of Sciences panel on that topic. She chairs the subcommittee on infant mortality and low birthweight of the Secretary's Taskforce on Black and Minority Health (Department of Health and Human Services). She holds the Ph.D. in sociology from the University of Kentucky.*

As a Ph.D. candidate in demography at the University of Pennsylvania, Christine Winquist Nord is assessing the consequences of mother's age at first birth for child development and family functioning, with particular emphasis on children of delayed childbearers. She is also coauthor with Pennsylvania sociologist Frank Furstenberg, Jr., of papers on the effects of marital disruption on the family. She prepared this Bulletin *as an intern on Dr. Baldwin's staff and has since joined the staff of Child Trends, Inc., in Washington, DC.*

"Delayed Childbearing in the U.S.: Facts and Fictions" is an extra, fifth issue of the Population Bulletin *for 1984, made possible with partial support from the National Institute of Child Health and Human Development.*

Headlines trumpet the story: "After-30 Motherhood at Epidemic Proportions"; "Panic is Sweeping a Generation of Women Getting Too Old to Have Children."

The baby boomers of the 1950s, whose deferred childbearing created the baby bust of the 1970s, are now producing babies. Many of the record number of American women now in their late twenties and thirties, who put off childbearing to compete in the tight job market of the 1970s and early 1980s, are deciding that the time to have a baby is now. Others, still childless, worry how long they dare race the biological clock. Although exaggerated by the media, delayed childbearing has indeed become the U.S. fertility phenomenon of the 1980s. It succeeds the unprecedented baby boom of 1947-1964 and the baby bust of the early and mid-1970s, and is part of the unexpectedly postponed and still faint "echo baby boom" since then.

Consider these facts:

- Since the early 1970s, first birth rates for U.S. women aged 25 to 39 have increased steadily, while the rates for younger women have declined. The most dramatic increase has been for women aged 30-34, with a doubling from 7.3 first births per 1,000 women this age in 1970 to 14.6 in 1982.
- In 1982, first births to women 25 and older accounted for 36 percent of all first births in the United States; in 1970, the proportion was only 19 percent.
- Between 1970 and 1981, the proportion of women still childless at ages 25-34 rose 56 percent—from 18 to 28 percent.

- Some researchers predict that as many as 28 percent of American women born in the 1950s will never bear children. Only about 9 percent of women born in the 1930s—the mothers of the baby boom generation—were childless at age 40.
- Ninety-one percent of married white women over 30 who became first-time mothers in 1980 held a paid job. Half were professionals, but more than a third were working in sales, clerical, or service jobs.
- Involuntary childlessness—the inability to conceive—does increase with a woman's age. But estimates of this increase range widely, from 9 to nearly 40 percent unable to conceive at ages 30-35 and 20 to 44 percent at ages 35 to about 40, and most of these estimates are based on studies of historical populations. New methods for treating infertility and better health are now helping many older women—and men—overcome biological problems that hampered delayed childbearing in the past.

In earlier times, delayed childbearing was accomplished by delayed marriage. Older ages at marriage are contributing to the current trend, but it is also related to other changes in U.S. society. Some of these are short-term. Economic difficulties caused both by their sheer numbers and a turbulent economy have forced many of the baby boom generation to postpone marriage as well as parenthood. With so many of them, competition for jobs was fierce as they entered the labor market in the 1970s. Combined with the recessions of 1974-75, 1979-80, and 1980-81, the result has been lower income, even for the rapidly increasing number of two-earner families, just as inflation and soaring costs have escalated the prices of the larger apartments or new homes sought by would-be parents.

But other changes that encourage delayed childbearing seem here to stay. The paid work force, once overwhelmingly male, in 1984 was 43 percent female. Fifty-three percent of married women age 16 and over were working or looking for a job outside the home in 1984, more than double the 24 percent of 1950. The family, although still a basic institution, is changing.[1] The typical family of the 1950s with a mother who stayed home to raise children while the father supported the family is now a shrinking minority. The number of unmarried couples living together more than tripled from 1970 to nearly 1.9 million in 1984. If current divorce rates continue, half of all recent first marriages will end in divorce.[2] And the average American is better educated than ever before.

The lives of American men and women are being dramatically affected by these changes. Where once women were expected to marry and concentrate on raising children,they now have many alternatives open to them. Where once men were almost alone in the work place, they now share it with women. Formerly the sole providers for their families, men are now more likely to share that responsibility with their wives. These changes are affecting the relations between men and women both within and outside of marriage.[3] And decisions to postpone marriage and/or childbearing are now more feasible with the advent of legal abortion and widespread use of effective contraceptives.

With all these changes it seems likely that delayed childbearing will remain a feature of American society. Well-documented information on the current trend is scanty, however, and misperceptions persist. In this *Bulletin,* we draw on diverse sources of data to illustrate how widespread delayed childbearing now is, where it fits among fertility patterns during this century, and how it differs from delayed childbearing in the past. Among the questions we ask are: What are the medical and health risks associated with delayed childbearing? How is it related to voluntary and involuntary childlessness? Who delays and why? How are the new, older mothers—most of whom return to work shortly after their children are born—and their employers accommodating to the juggle between job and childraising? What are the implications of delayed childbearing for family life and American society? How does the U.S. experience compare with that of other developed countries? And how likely is it that the trend will last?

What Is Delayed Childbearing?

Everybody talks about "delayed childbearing" but just exactly what do we mean by the expression? The media and the public frequently assume that it refers to a first birth after a woman turns 30, but often are not explicit about the age cutoff and whether or not second and later births are also included in the definition.

In this *Bulletin,* "delayed childbearing" will mean delayed entry into parenthood, that is, the timing of the *first* birth in parents' lives. This definition excludes other interesting but complex possibilities. Consider, for example, a couple who have their first child in their early twenties but delay the second until their mid-thirties. In a sense they have started over again. The second family of a remarried divorced person, with a different spouse, can also seem like a new beginning, particularly for divorced and remarried men, whom, research suggests, tend to lose contact over time with their former families.[4] By eliminating these variations, however, we narrow the focus to a clearly measurable group.

For many, the first birth is qualitatively different from later births. For sociologists, it marks the entry of individuals into the roles of mother or father. To economists, it means an increase and shift in the pattern of couples' expenditures. Psychologists stress that it involves psychological and emotional adjustments for parents which are not as great at the birth of a second or third child.[5]

Then there is the question of how to determine the age cutoff that divides older from younger first-time mothers. In adolescent childbearing, the important question is at what age do young women *cease* being adolescent. In delayed childbearing, the important one is at what age do women *start* being delayers. For both groups, gradations of age are of interest. Childbearing at the youngest and oldest ages, though rarer, is of special concern because of the increased health risks. In 1982 in the U.S., there were 9,327 first births to girls under age 15 and 2,581 to women aged 40 and older.

With adolescent childbearing there is a sense that children come too soon, or to women who are too young. With delayed childbearing, do children come too late, or to women who are too old? The assumption in both cases is that there is some best or normal range to begin childbearing. Certainly for very young teenagers, research has shown that waiting a while longer to begin childbearing is better for both the parent and the child. However, little research has looked at whether older is better throughout the childbearing years.

Is it appropriate to term births "late" or "early"? How does one decide which births are "on time"? A sociologist and an obstetrician may have quite different views about what is a late first birth. To a sociologist, any delay past a typical age (early twenties in the U.S.) may signal that men's and women's lives are changing in important ways. Obstetricians, however, do not usually become concerned about the age of a first-time mother—barring any special medical problem she may have—until a woman is at least 35. Even then there is disagreement over whether she is at substantially higher risk than a younger woman. In order to address the social as well as medical aspects, we define delayed childbearing as the initiation of childbearing at age 25 or older.

A definition of delayed childbearing could include other issues beyond age and birth order. For example, does delay imply a conscious decision to defer childbearing past the age a woman originally expected to begin her family? If a couple encounters a fertility problem that

Table 1. First Births to U.S. Women: 1970 and 1982

Age of mother	1970 Number of first births	1970 Percent of total first births	1970 Rate of first births per 1,000 women in age group	1982 Number of first births	1982 Percent of total first births	1982 Rate of first births per 1,000 women in age group
Total women, 15-49	1,430,680[a]	100.0	34.2[b]	1,555,627[a]	100.0	28.6[b]
15-19	498,388	34.8	53.7	395,507	25.4	41.0
20-24	652,530	45.6	78.2	588,979	37.9	54.7
25-29	212,102	14.8	31.2	396,620	25.5	38.4
30-34	42,404	3.0	7.3	136,814	8.8	14.6
35-39	11,704	0.8	2.1	25,799	1.7	3.3
40-44	2,442	0.2	0.4	2,498	0.2	0.4
45-49	178	0.01	0.0	83	0.005	0.0

Sources: 1970: National Center for Health Statistics (NCHS), "Summary Report, Final Natality Statistics, 1970," *Monthly Vital Statistics Report*, Vol. 22, No. 12, Supplement, March 20, 1974, Tables 2 and 3; 1981: NCHS, "Advance Report of Final Natality Statistics, 1982," *Monthly Vital Statistics Report*, Vol. 33, No. 6, Supplement, September 28, 1984, Tables 2 and 3.

[a] Includes first births to women under 15: 10,932 in 1970; 9,327 in 1982.

[b] Rates computed by relating total first births, regardless of age of mother, to women aged 15-44.

is not resolved until the woman is in her thirties, does that constitute delayed childbearing? Is childbearing that follows promptly upon a delayed marriage the same kind of delay as childbearing that starts after a decade of marriage? This *Bulletin* alludes to some of these issues, but data necessary to disentangle the different reasons for delay are not generally available or available over time.

How Widespread and How Unusual?

In spite of all the recent attention, delayed childbearing is not at "epidemic" proportions in the U.S. In 1982 (the latest year for which data are available), there were 1,555,627 first births to women of all ages (see Table 1). Thirty-six percent—561,814—were to women 25 and older. Within this group, women aged 25-29 accounted for the vast majority —71 percent—or 26 percent of all first births. Another 8.8 percent (136,814) of all first births occurred to women aged 30-34. Only 28,380, or 1.8 percent of all first births, were to women 35 and older, and only 83, or .005 percent, were to women 45 and older. First birth *rates* for women 25 and older were also modest in comparison with the rates for younger women. Even the first birth rate of 38.4 per 1,000 women aged 25-29 was well below the highest rate—the 54.7 per 1,000 for women aged 20-24—and the rate for women aged 35-39 was only 3.3 per 1,000 in 1982.

It is the increase in the numbers and rates of first births for women 25 and older since the early 1970s that has stimulated the current interest. Between 1970 and 1982, as Table 1 shows, the number of first births to women aged 25-49 more than doubled, rising from 268,830 to 561,814, and the percentage that these births represented of all first births nearly doubled—from 19 to 36. Most dramatic were the increases for women aged 30-34: their first births more than tripled, from 42,404 to 136,814, and their first birth rate doubled from 7.3 to 14.6 per 1,000 women.

Increasing numbers and rates of *first* births among older women do not necessarily mean that the *total* number of births to older women is increasing.

Table 2. Total Births and First Births to Women Age 25 and Over: 1950, 1960, 1970, 1980

Age of mother	1950		1960		1970		1980	
	Number (in 1,000s)	Percent of total	Number (in 1,000s)	Percent of total	Number (in 1,000s)	Percent of total	Number (in 1,000s)	Percent of total
All birth orders								
Total to women 15-49	3,554	100	4,258	100	3,731	100	3,612	100
25-29	1,022	29	1,093	26	995	27	1,108	31
30-34	598	17	688	16	428	12	550	15
35 and over	373	11	457	11	233	6	165	5
First births								
Total to women 15-49	1,089	100	1,090	100	1,431	100	1,546	100
25-29	221	20	141	13	212	15	372	24
30-34	81	7	50	5	42	3	113	7
35 and over	37	3	24	2	14	1	20	1

Sources: NCHS, *Vital Statistics of the United States 1950*, Vol. 2, *Marriage, Divorce, Natality, Fetal Mortality, and Infant Mortality* (1953) Table 28A, *Vital Statistics 1960*, Vol. 1, *Natality* (1963) Table 2-15, "Summary Report: Final Natality Statistics, 1970," *Monthly Vital Statistics Report*, Vol. 22, No. 12, Supplement, March 20, 1974, Table 2, and "Advance Report of Final Natality Statistics, 1980," *Monthly Vital Statistics Report*, Vol. 31, No. 8, Supplement, Nov. 30, 1982, Table 2.

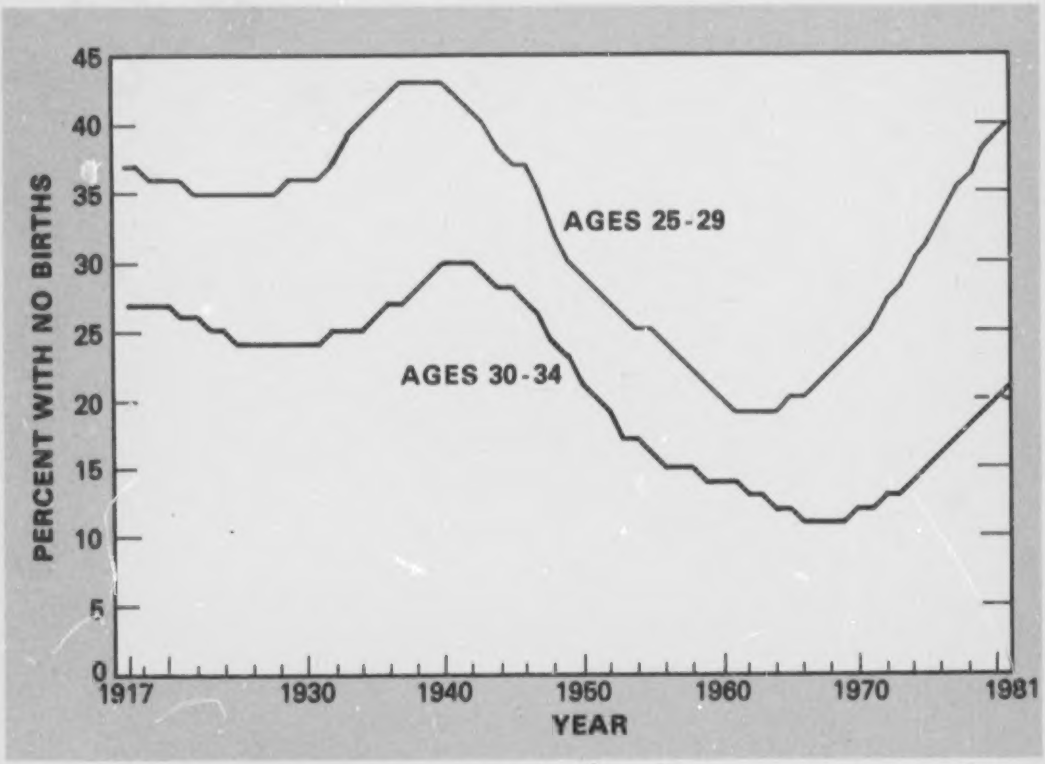
Higher order births have decreased in the past two decades, especially third and later births, and most of these were to women 25 and older. Table 2 shows changes in the number and percentages of all births and of first births to women 25-29, 30-34, and 35 and over at ten-year intervals since 1950. Three years after the 1957 peak of the baby boom (when more than 4.3 million babies were born), in 1960, women 25 and older had 2.2 million births—53 percent of the 1960 total of just under 4.3 million births of all orders. In 1980, there were 1.8 million births to women these ages—51 percent of the total of 3.6 million. The trend for first births to women 25 and older was the reverse: from 215 thousand (20 percent of all first births) in 1960 to 505 thousand (32 percent of the total) in 1980.

The percentages of all births or of first births that are to women of a given age are influenced by those women's own childbearing rates, the rates of other women, and the relative number of younger and older women in the childbearing population. While it may seem confusing to think that numbers, rates, and percentages could tell different stories, that is unfortunately the case. The post-World War II baby boom created a bulge in the age structure of the U.S. population; there were one-third more babies born in the 1950s than in the decade before or after. The women of this cohort are, or will be, in their thirties in the 1980s and the extra-large size of the cohort alone means that these women currently have a disproportionate influence on the overall fertility picture. Thus, one must look at several indicators of fertility change to determine if American women really are delaying childbearing. One important indicator is change in childlessness among women in their late twenties and early thirties.

Childlessness and birth expectations

With delayed childbearing defined as delay in the onset of childbearing, there is obviously a close relationship with patterns of childlessness. Until the first birth, couples are childless and rarely know for

Figure 1. Percent of Women Still Childless at Ages 25-29 and 30-34: 1917-1981



Sources: Robert L. Heuser, *Fertility Tables for Birth Cohorts by Color: United States, 1917-1973* (Rockville, MD: NCHS, 1976), and annual updates to this publication available on tape from NCHS.

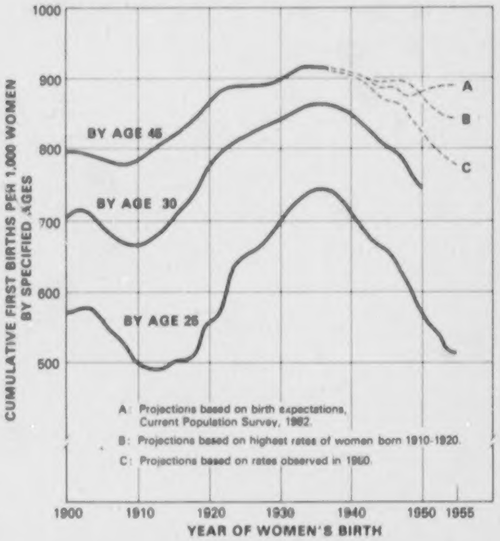
certain if they will remain childless or go on to have children. If they do have children at an older age, they are said to be "delayed childbearers." In other words, the category of childless includes many people who are temporarily childless, that is, childless at age 30 but not at age 35. A woman is not really permanently childless until menopause arrives without a birth or until she (or her partner) is sterilized without having had a child. A woman is not a delayed childbearer until she has had a first birth beyond some age which presumably divides older from younger first-time mothers. Thus, childlessness and delayed childbearing are intertwined. In fact, the reasons that cause a woman or a couple to postpone childbearing may be quite similar to those that lead them in the end to remain child free.

Between 1970 and 1981, the proportion childless among women in their late twenties and early thirties nearly doubled. In 1970, 24 percent of women aged 25-29 and 12 percent of women aged 30-34 had never had a child. By 1981, these proportions had increased to 40 and 21 percent. This steep rise is misleading, however. As Figure 1 shows, the proportion of women still childless in their late twenties was close to an all-time low in 1970. The high figure of 1981 for women aged 25-29 was still a bit lower than that of about 1940 at the end of the 1930s depression when more women of these ages had put off childbearing than ever before. These peaks are much closer to the level of childlessness among women in their late twenties in the early part of the 20th century than are the low levels of the late 1960s. The proportion childless among women aged 30-34 in 1981 was about the same as it had been during most of this century. Thus, the current level of childlessness among women in their late twenties and early thirties is only unusual by comparison with the trend of the 1950s and 1960s.

The percentage of older childless women who say they expect to remain childless has dropped significantly since the mid-1970s, reflecting the growing number of women who are beginning childbearing at later ages. Among currently married childless women aged 30-34 queried in the Census Bureau's Current Population Survey, the proportion who said they expected to have no children dropped from 68 percent in 1976 to 53 percent in 1982.[6] For widowed, divorced, and separated women of these ages the drop was from 83 to 72 percent.

Although American demographers have been notoriously inaccurate in their fertility forecasts during this century—none foresaw the size and length of the post-World War II baby boom—it is still interesting to speculate how likely it is that currently childless older women will have the children they say they expect. Demographer Arthur Campbell explored this by comparing women's birth expectations reported in the June 1982 Current Population Survey with past and current delayed childbearing trends. Of women age 26 in June 1982—those born in 1955—56 percent had already become mothers and another 33 percent said they expected to bear at least one child. To achieve this, however, these women's rates of first birth after age 25 will have to exceed the highest such rates ever observed in the U.S. These records were set by the women born between 1910 and 1920, whose "cumulative" rates of first birth were very low up to age 25 as they postponed childbearing during the depression of the 1930s, but soared after that age as they caught up during and after the war as the baby boom gained momentum. For example, if women age 26 in 1982 were to match the record of the 1915 cohort, only another 28 percent will have become mothers by age 45 instead of the 33 percent still childless in 1982 who said they expected to have at least one child. If these women experience the first birth rates for women age 26 and over observed in 1980, only 22 percent more will eventually become mothers (see Figure 2). Thus, unless these women reduce their expectations—which is certainly possible[7] —many are unlikely to become mothers although they say they intend to.

Figure 2. First Birth Rates by Ages 25, 30, and 45 of Women Born 1900-1955



Source: Calculations by Arthur Campbell, Center for Population Research, National Institute of Child Health and Human Development, from cohort fertility tables of NCHS, available on tape.

Of course, there is always the chance that these women will start bearing children after age 25 at higher rates than the 1910-1920 cohorts did, but this scenario is unlikely. Priorities will change for some and they will decide to forego childbearing. Others will encounter fertility problems. For most, future birth expec-

Are Women 30-34 Really Delaying Childbearing? A Seeming Paradox Explained

Between 1970 and 1980, the first birth rate for women aged 30-34 rose by 75 percent, from 7.3 to 12.8 first births per 1,000 women, and the number of first births to women this age went up 166 percent, from 42,404 to 112,964. Yet the first birth *probability* for women this age increased only from 61.5 to 64.9 per 1,000. The rates and numbers suggest that women in their early thirties are having many more first births than their counterparts did in 1970, but the probabilities indicate that childless women aged 30-34 were only slightly more likely to have a first birth in 1980 than they were in 1970. How can both of these facts be true?

The first birth rate for women aged 30-34 is the number of first births to women 30-34 divided by the total number of women in that age group. The first birth probability for women 30-34 is the number of first births to women 30-34 divided by the total number of *childless* women in that age group. The rate can rise because of two different processes. There can be an increase in the likelihood that a childless woman that age will bear a child, that is, the probability of a first birth can increase. Or, there can be an increase in the number of women who remain childless until they pass 30 and then experience the same probability of childbirth as in earlier times. In the U.S., it is the second process that is causing the current increase in both the number and rate of first births among women in their early thirties. The probability of having a first birth at that age has remained virtually unchanged over the past decade.

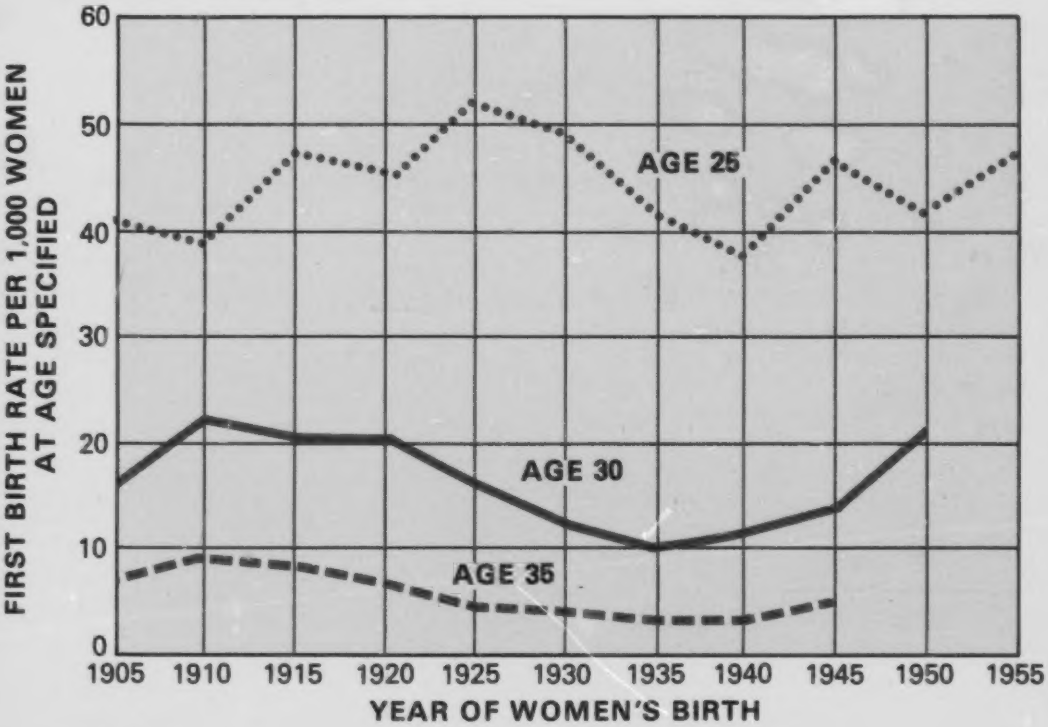
What these apparently discrepant facts do tell us is that the interesting fertility issue for the 1980s is understanding the forces that lead vastly more women to remain childless until their thirties. Not only is a greater proportion of women remaining childless to at least age 30, but also the baby boom bulge in the U.S. population means that the number of women in their twenties rose sharply during the 1970s. So, a larger population of women in their twenties, greater likelihood that they would remain childless during their twenties, and then similar birth probabilities once they pass age 30 have combined to give us the increased rate and number of first births to women aged 30-34.

tations depend on their being married. However, some of the currently married women will separate or divorce, and some currently unmarried women will not find a suitable partner and for that reason will forego childbearing. Harvard economist David Bloom predicts that as many as 29 percent of white women and 20 percent of nonwhite women born during the 1950s will never bear children.[8]

Who are those couples who ultimately remain childless? Obviously, not all are childless by choice. Women who actively prevent pregnancy because they are not yet married are voluntarily childless in one sense, and yet might prefer to have children if they had a suitable mate. Similarly, many couples may be prompted by economic circumstances to postpone a birth that they might prefer to have now, and some of these may for this reason end up with no children. There are also couples who are unsure whether they want children. We assume that all these couples are able to have children if they so desire. There are, of course, those couples who are physically unable to bear children; they are considered later.

Thus, it can be seen that the currently childless are a diverse group. Ideally, to understand the different facets of childlessness, those who are simply deferring births should be distinguished from couples and women who will be childless at the end of their reproductive lives. Further, it would be useful to separate couples who do not want children from those who forego, or give up, having children; their motivations and desires are quite different. In practice, however, these dis-

Figure 3. First Birth Rates at Ages 25, 30, and 35 of Women Born 1905-1955



Sources: See Figure 1.

tinctions can only be made by asking questions about attitudes and intentions, and such data, although useful, are not exact and are likely to change over a person's lifetime.

Researchers have only recently studied voluntarily childless couples. The results obtained so far indicate that they tend to be white, urban, employed, highly educated individuals who have married at later ages, experienced marital disruption, and moved frequently as adults.[9] They also tend to have higher incomes than other couples.

Delayed first birth trends

Tracking long-term trends in older women's first birth rates at different ages, like trends in childlessness, also helps put current delayed childbearing in perspective. Figure 3 shows women's first birth rates at ages 25, 30, and 35 for women born between 1905 and 1955. The first birth rates at ages 30 and 35 for women born in 1945 and 1950, who reached those ages in 1980, are higher than those for women born in the 1930s, who participated in the baby boom of 1947-1964 and experienced high first birth rates at younger ages, but similar to the first birth rates at ages 30 and 35 for women born between 1910 and 1920. The first birth rate at age 25 for women who reached that age in 1980 (born in 1955) is also higher than the rate at that age for women born in 1935 and 1940 and similar to the first birth rates at age 25 of women born 1910-1920. However, it is overshadowed by the rates of women born in 1925 and 1930, who reached age 25 in 1950 and 1955 as the baby boom was rising to a peak.

Many researchers have shown that the social and economic circumstances of a period strongly affect fertility trends at that time. In fact, temporal effects on fertility are so marked that women at all childbearing ages respond in similar ways to the circumstances they live through.[10] More and more social scientists are recognizing that the high fertility of the baby boom era was an exception to the sustained decline in American women's fertility which began as far back as 1800.[11] During the boom, women across the whole range of childbearing ages, from teenagers to those in their late thirties, responded to the thriving postwar economy by having babies—older women making up somewhat for the children they had put off during the depression and wartime years; younger women marrying earlier and having children sooner and closer together than their mothers had. But the experience of women born between 1910 and 1920 was also anomalous. They entered their childbearing ages during the massive and unexpected depression of the 1930s and left them with almost the lowest completed family sizes so far recorded in the U.S., despite their postwar efforts to compensate for low fertility during their younger years.[12]

What is happening now? Is the current wave of delayed childbearing only a response to contemporary conditions? Some economists indicate that it is. Chase Econometrics economist Michael Carliner observes that it is the baby boomers born in 1948 and 1949 and now in their late thirties who are the much-publicized, affluent "yuppies" or "yumpies" (young upwardly mobile professionals). Their more numerous successors are much worse off and falling steadily behind.[13] Over 4 million babies were born each year between 1954 and 1964, compared with 3.6 million in 1948 and 1949. Because of their larger numbers, combined with recurrent recessions during the 1970s and early 1980s, the later baby boomers have faced much fiercer competition in the job market and had to accept lower pay than the oldest baby boomers. Carliner points out that incomes of families in the 25-34 age bracket, though most have two earners, averaged only 86 percent of the incomes of all family households in 1983, down from more than 96 percent in 1965. At the same time, housing costs have soared. George Sternlieb, director of the Rutgers Center for Urban Policy Research, notes that in 1984, houses cost twice as much and mortgage interest rates are 40 percent higher than they were when the 1948 and 1949 baby boomers reached age 30, and rentals now absorb 30 percent of family incomes, compared to 25 percent five and more years ago.[14] Having to work harder and wait longer to acquire living quarters suitable for raising a family could well be a factor in the baby boom generation's delayed childbearing.

Today's delayed childbearing is similar to that of women born between 1910 and 1920 who postponed children during the 1930s depression and tried to catch up during the prosperous postwar era.

Rather than a response to the harder times people now in their twenties and early thirties have faced, is the current trend more a return to the downward trend in fertility interrupted by the baby boom and the earlier pattern of much childbearing delayed to after age 25? It is too early to say for sure. The U.S. total fertility rate—the average number of lifetime births women would have if they experienced current age-specific fertility rates—has hovered around 1.8 births per woman since the mid-1970s, less than half the baby boom peak rate of 3.7 in 1957 and below the previous low of 2.1 reached in the mid-1930s. However, the return to relatively high first birth rates after age 25 is more recent. Certainly, if we are returning to patterns of earlier decades in the 20th century the causes will probably be quite different.[15] Women now have many more life options to compete with childraising, and the contraceptive revolution has given couples much more control over the initiation of childbearing, reinforced by the availability of safe, legal abortion. Further, the widespread availability and use of sterilization removes the risk of unintended pregnancies after desired family size is reached.[16]

Racial patterns

Patterns of childbearing differ considerably for black and white women. Black women enter parenthood more quickly during the teenage years than white women do. However, among some cohorts born in the earlier part of the century—those of 1905-1909 and 1915-1924—more black than white women were childless at age 40. This is attributed to subfecundity, nutritional deficiencies, and unstable unions experienced by these black women, rather than intentional delay or foregoing of children.[17] Today, the likelihood of becoming a mother is about equal for black and white women, but black women are much less likely to delay the onset of childbearing. Among women born between 1945 and 1949, for example, 74 percent of black women had borne at least one child by age 25, compared to 59 percent of white women (see Table 3). By age 30, the difference remained but had narrowed to 83 percent for blacks, versus 77 percent for white women.

Table 3. Percent of Black and White Women Born 1940-1954 Who Were Mothers by Age 25 and Age 30

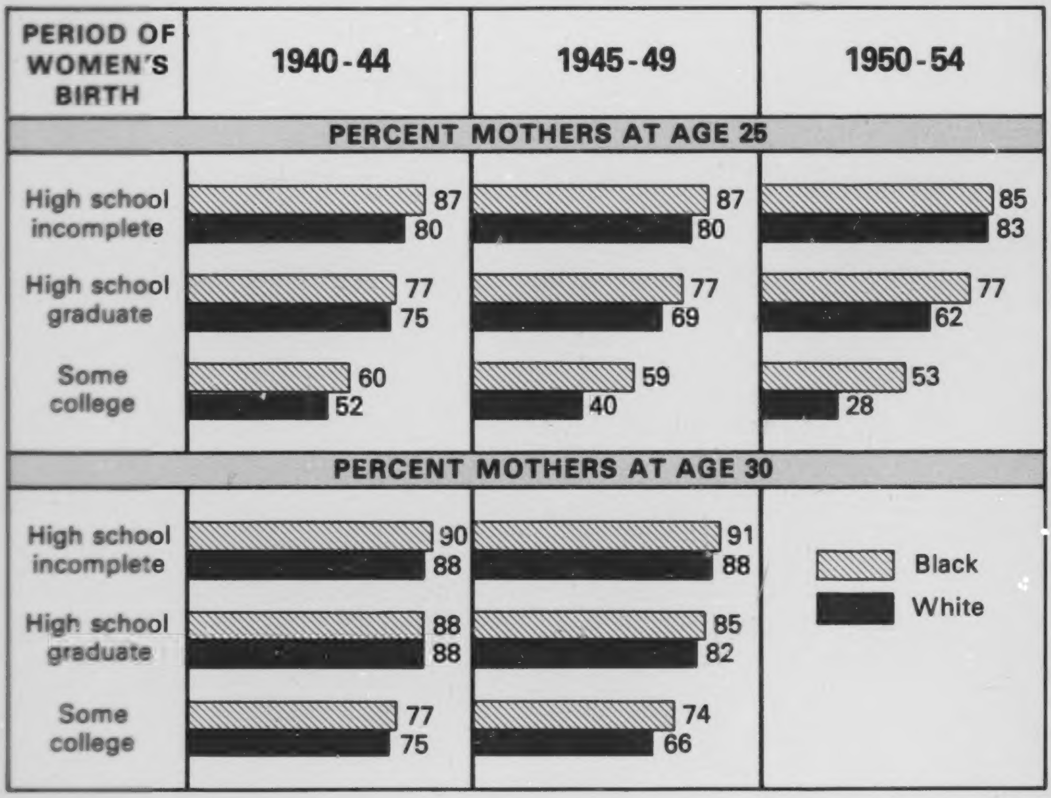
Period of women's birth	Percent mothers at 25		Percent mothers at 30	
	Black	White	Black	White
1940-45	76.5	68.2	86.1	83.5
1945-49	73.8	58.8	83.4	77.0
1950-54	71.1	51.1	—	—

Source: Carolyn C. Rogers and Martin O'Connell, "Childspacing Among Birth Cohorts of American Women: 1905 to 1959," *Current Population Reports*, Series P-20, No. 385 (Washington, DC: Bureau of the Census, 1984) Table 1.

These differences could be distorted by black women's generally lower educational attainment, which is related both to higher fertility and less delayed childbearing. Figure 4 (page 14) shows the differences for recent cohorts within educational groups. Among women born from 1950 to 1954 who did not finish high school, the percentage of women who had become mothers by age 25 was scarcely higher for blacks (85) than for whites (83). For high school graduates in this cohort, however, the percentage for blacks (77) was about a quarter higher than for white women (62) at age 25. And among women with some college education, black women were almost twice as likely as white women to have had a child by age 25 (53 versus 28 percent). These differences within educational groups for women born between 1950 and 1954 are wider than they were for the cohorts of 1940-1944 and 1945-1949 at age 25. The narrower differences within educational groups by age 30 (shown for the two earlier cohorts) indicate that better educated white women do more catching up in their late twenties.

Sociologist Ronald Rindfuss notes that black women, especially the better educated, seem increasingly less likely than similar white women to delay motherhood, at least up to age 25, and speculates that these women may view current economic difficulties less harshly than

Figure 4. Percent of Black and White Women Born 1940-1954 Who Were Mothers by Age 25 and Age 30, by Education



Source: Table 2 of source cited on Table 3.

their white counterparts and therefore have less motivation to delay childbearing.[18]

Why Do Couples Delay Childbearing?

Although delayed childbearing has occurred in the past, today's trend is of particular interest not only because of the numbers involved, but also because observers suspect that American society is changing in ways that will cause more and more women to postpone childbearing, even after economic prospects have brightened for young people. Among these changes are increasing levels of education among both men and women, but particularly women, better opportunities for women in the labor force, changing sexual and childbearing norms, and changing attitudes toward marriage and the family.

These changes are clearly related to each other and to decisions about fertility, but the exact relations are not well understood. In the past, individuals usually completed their education before they began work or married. They married before they began having children. Many women worked before they married, but retired for years or for good once they married or began childbearing. The pattern of these activities became more varied for women in particular after World War II, but to the extent that they still occur in sequence, a delay in one may

> Peace activist, 34, delayed first birth to 30:
>
> "I wanted to get a start on a career. After college I went directly to grad school and got my master's and by that point I had just been married . . . . Then we moved to [current residence] when [child-psychiatrist husband] started internship at Children's Hospital. It was such a hectic schedule for him and I was in a new city with a new job. I wasn't ready to have a child."
>
> —*The Philadelphia Inquirer*, July 22, 1984

mean a delay in the next stage.[19] Thus, some of the delay in starting families may be because women are spending more years in school, starting work later, and waiting longer to establish themselves in a career before marrying and then before taking on the extra responsibility of children. It is also possible that additional time spent in one stage means an even longer delay in entering the next stage. As noted below, for example, women who marry at older ages average a longer interval before their first birth than do women who marry earlier. Some of this is due to women's increasing infertility at older ages, but most is due to new attitudes and behavior among women—and men.

Delayed marriage

Delayed marriage characterized much of Western Europe and parts of North America through the 18th and 19th centuries and well into the 20th century, and consequently many women began childbearing in their late twenties and early thirties, since few births occurred out of wedlock. Around 1800, women's age at marriage averaged over 27 in Belgium, France, Germany, and Scandinavia.[20] One reason was social custom which dictated that property should be passed to a sole heir, usually the eldest son; and other sons must work and save enough to be able to support a new household before marrying. In North America, abundant land and a sparse population made marriage affordable at younger ages, but there were pockets of relatively late marriage; in Philadelphia around 1880, for example, women's median age at first marriage was 25, compared to the national median of 23 at that time and just over 20 during the 20th century baby boom.

With the availability of effective contraceptives and changing attitudes toward marriage and the family, it is now easier to defer childbearing without deferring marriage or other unions. Are the women who are postponing childbearing in the 1980s marrying at the same ages as their mothers did but simply waiting longer before having children? Or are they instead waiting longer to get married?

Young men and women are now clearly marrying at later ages than they have in the past few decades. In 1950, 68 percent of women aged 20-24 had already married; the proportion had slipped to 64 percent by 1970 and then plunged to only 44 percent in 1983, as Table 4 indicates. The number of couples living together without being married has tripled since

Table 4. Percent of Women and Men Never Married, by Age: 1890-1983

	20-24		25-29		30-34	
Year	Women	Men	Women	Men	Women	Men
1890	52	81	25	46	15	27
1900	52	78	28	46	17	28
1910	48	75	25	43	16	26
1920	46	71	23	39	15	24
1930	46	71	22	37	13	21
1940	47	72	23	36	15	21
1950	32	59	13	24	9	13
1960	28	53	11	21	7	12
1970	36	55	11	19	6	9
1980	50	69	21	44	10	16
1983	56	73	25	38	13	20

Sources: Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, Part 1 (1975) Series A160-170, and "Marital Status and Living Arrangements: March 1983," *Current Population Reports*, Series P-20, No. 389, June 1983, Table B.

1970, but at 1.9 million in 1983, these couples still made up only 4 percent of all couple households, and they fall far short of compensating for the decline in formal unions at younger ages. In 1983, the percentage of women still never married at ages 20-24 (56) was higher than at any time since 1890, as Table 4 shows. However, the proportions never married among women aged 25-29 and 30-34 in 1983, although more than double the proportions in 1970, were similar to levels in the early decades of the 20th century. The pattern is also true of men, although by 1983, more men over 30 had been married than had their counterparts at the turn of the century.

Table 4 suggests that much of the current delay in childbearing is due to delayed marriage, as in the past. If couples divorce without having children, the time taken to establish a second union could further delay childbering. But are later-marrying couples also delaying childbirth after marriage?

Delays after marriage

Data on the length of time between first marriage and first birth—the first birth interval—suggest that American women are indeed increasingly likely to defer childbearing after they marry. The median first birth intervals for children born since 1940 to mothers age 20 and older at the births, shown in Table 5, have increased fairly steadily for all these ages since about 1960. Between 1960 and 1964, half of new mothers aged 20-24 had their first births within a year-and-a-half (15.5 months) of marriage. By 1975-79, the median interval had lengthened to two years (24 months). Women over 30 at the birth of their first child have the longest median first birth intervals—more than five years (64.8 months) in 1975-79—but their first birth intervals varied least between 1940 and the end of the 1970s. Since the mid-1960s, the median interval between the first and second births for those women who go on to have a second birth has also lengthened. Thus women are waiting longer after marriage to begin childbearing and also spacing their births farther apart.

Table 5. Timing of First Birth After Marriage: 1940-1979

(Median months between first marriage and first birth, by period of child's birth and age of mother at birth)

Period of child's birth	Age of mother at first birth		
	20-24	25-29	30 and over
1940-44	17.6	29.1	60.3
1945-49	17.2	28.9	47.2
1950-54	18.4	33.2	54.3
1955-59	16.2	30.1	53.8
1960-64	15.5	30.4	55.3
1965-69	15.9	33.3	59.1
1970-74	20.1	42.8	56.8
1975-79	24.0	48.9	64.8

Source: Table 9 of source cited on Table 3.

What is causing women and men to put off marriage and postpone childbearing after marriage? A likely factor is the new opportunities for women in the paid work force.

Trends in women's work

The world of work and women has been revolutionized since the baby boom era. Fifty-three percent of married women age 16 and over were working or looking for a job in 1984, up from 24 percent in 1950 (see Figure 5, page 18). Young women are changing their commitment to work in fundamental ways. During the 1950s and on into the 1960s, women who had not yet had a child were likely to be employed, but employment rates dropped sharply at ages 25-34, the peak years of childbearing and early childrearing. Now women are returning to their jobs shortly after childbirth. How can what women do *after* a birth influence the timing of a first birth?

Today's pattern may signal a change from the view of women's paid employment as something to do before beginning the "real job" of childrearing, and later only a supplement to family income. Now the majority of women expect to work until retirement age, with only rela-

Table 6. Occupation of Married White Women Having a First Birth in 1980

(Numbers in percent)

	Occupation of employed women				
Age of women	Professional	Sales, clerical	Services	Crafts, other	Not in labor force
Under 20	2.0	25.9	16.9	9.6	45.5
20-24	15.4	45.2	11.4	10.3	17.6
25-29	36.1	38.5	7.1	6.5	11.8
30 and over	50.2	30.4	5.9	4.1	9.3

Source: NCHS, 1980 National Natality Survey, unpublished tabulations.

Note: Data refer to the woman's occupation in the 12 months preceding the birth.

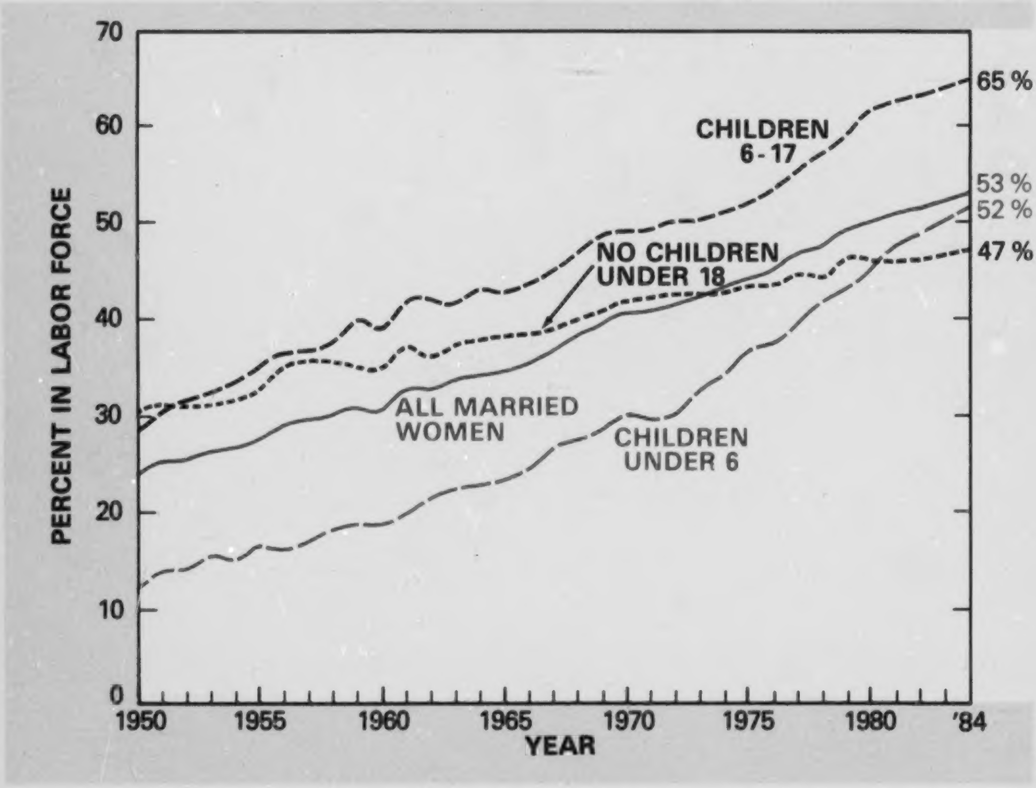
tively brief interruptions for childbirth. In 1950, the average 20-year-old woman could expect to spend only 14.5 years, or 27 percent of her life, in the labor force. By 1977, the average had risen to 26 years, or 45 percent of her life.[21] This increasing commitment to the world of work is probably related to women's greater investment in education, as reflected in the rapidly growing number of women acquiring advanced college degrees or the highly specialized training required for the better-paying, more prestigious jobs. Skilled, high-paying crafts once considered for men only, for example, now include a small, but growing number of women. In 1972, only 0.6 percent of electricians and 0.5 percent of carpenters were women; by 1982, these figures had tripled to 1.6 and 1.7 percent. Many women are evidently deferring the added responsibility of a child while they invest in these opportunities to increase their qualifications and then become established in a long-term career. At the opposite side of the coin are very young teenagers who bear a child. Some investigators now feel that one factor in very early childbearing is that these girls see little chance of economic success that would be hampered by the presence of a child.[22]

Of course, as we have seen, many married women now in their twenties must work out of sheer economic necessity and are undoubtedly forestalling childbearing until they and their spouses feel more financially secure. The stereotype of today's delayed childbearer is of a well-paid, professional woman. Data do support this image to some extent, but also reveal the diversity of women who defer childbearing. Half of the married white women who had a first birth in 1980 at age 30 or more held a professional job in the year before the birth (see Table 6). Yet more than one-third (36 percent) were sales, clerical, or service workers. A small fraction (4 percent) were working in other types of jobs. Only 9 percent were unemployed at the time of the birth.

Contributing to women's increased labor force activity and probably also a factor in delayed childbearing is that couples now expect to spend much less time in raising children than their parents did. In the typical baby boom family of three or more children, the time between the first and last births averaged nine to ten years. Now most American women say they expect to have only two children and the median interval between first and second births, though increasing, is currently about three years.[23] This means the first birth can be delayed—and a woman can plan to stop work only briefly for childbirth—with the expectation that the harried years of juggling a job and the demands of small children will be short.

However, the prospect of those harried years, especially the effort of arranging acceptable care for small children while they work, may well prompt many working women to further delay childbearing.

Figure 5. Labor Force Participation Rates of Married Women, by Presence and Age of Children: 1950-1984



Sources: Arland Thornton and Deborah Freedman, "The Changing American Family," *Population Bulletin*, Vol. 38, No. 4 (October 1983) Figure 7; and unpublished data from the Bureau of Labor Statistics, September 1984.

Working mothers and child care

A 1977 study estimated that one-third of working mothers are back at work three months after the births of their babies; seven years later, the figure is probably much higher.[24] Fifty-two percent of all mothers of preschool children under age six were working in 1984, up from 12 percent in 1950 and 30 percent in 1970 (see Figure 5). For mothers of school-age children ages six to 17, the increase was from 28 percent in 1950 to 49 percent in 1970 and 65 percent in 1984. These dramatic increases have escalated the problems of combining motherhood with the worker role. Businesses of all types, from law firms to manufacturers, are having to accommodate to the needs of the mothers among their employees. For working parents, a prime concern is the provision of child care for their preschool children and some before or after school supervision for their school-age children.

Flexibility in work schedules through flex-time, part-time employment, or job-sharing is one way to meet some of the child-care needs. Flex-place, the option to work at home, is another. Companies and government agencies that only recently regarded these options as risky are now beginning to experiment with them in order to attract and keep valued employees. Can two parents on flexible schedules meet their own needs and

Table 7. Child-Care Arrangements for Youngest Child Under Age 5 of Married Mothers Working Full Time: 1982

(Numbers in percent)

Child-care arrangements	1982
Total	100.0
Care in child's home	25.5
By father	12.8
By other relative	8.5
By nonrelative	4.2
Care in another home	45.0
By relative	19.5
By nonrelative	25.5
Group care center	17.3
Mother cares for child while working (and all other arrangements)[a]	12.3

Source: Martin O'Connell and Carolyn C. Rogers, "Child-Care Arrangements of Working Mothers: June 1982," *Current Population Reports*, Series P-23, No. 129 (Washington, DC: Bureau of the Census, 1983) Table A.

[a] Includes children for whom child-care arrangements are unknown.

Note: Data refer to child-care arrangements only while the mother is working.

those of their children? So far there is no definitive answer, but a study of couples' work schedules by sociologists Harriet Presser and Virginia Cain revealed that in 1980, 10 percent of dual-worker couples were working different shifts and part of the reason was to ensure that at least one parent would always be home when the children were.[25] In 1982, 13 percent of working wives with a child under five reported that the father cared for the child while they worked (see Table 7). Little research has investigated the effect of such arrangements on the children, the marital relationship, or family well-being.

The U.S. is one of the few industrialized countries with no national day-care program, although low-income families receive child-care subsidies through such programs as Head Start and Aid to Families with Dependent Children. Employed parents are allowed a tax credit for child care of up to $720 per child per year, not to exceed $1,440 per family, in families with annual incomes under $10,000; in families with annual incomes of $28,000 or more, the maximum credit is $480 per child and $960 per family.[26] For most families this is scant compensation when the *weekly* costs for the care of one child in the Washington, DC, area in 1984, for example, averaged $75 for private group day care, $100 in a day-care center, and $150 for a full-time baby sitter in the child's own home.[27]

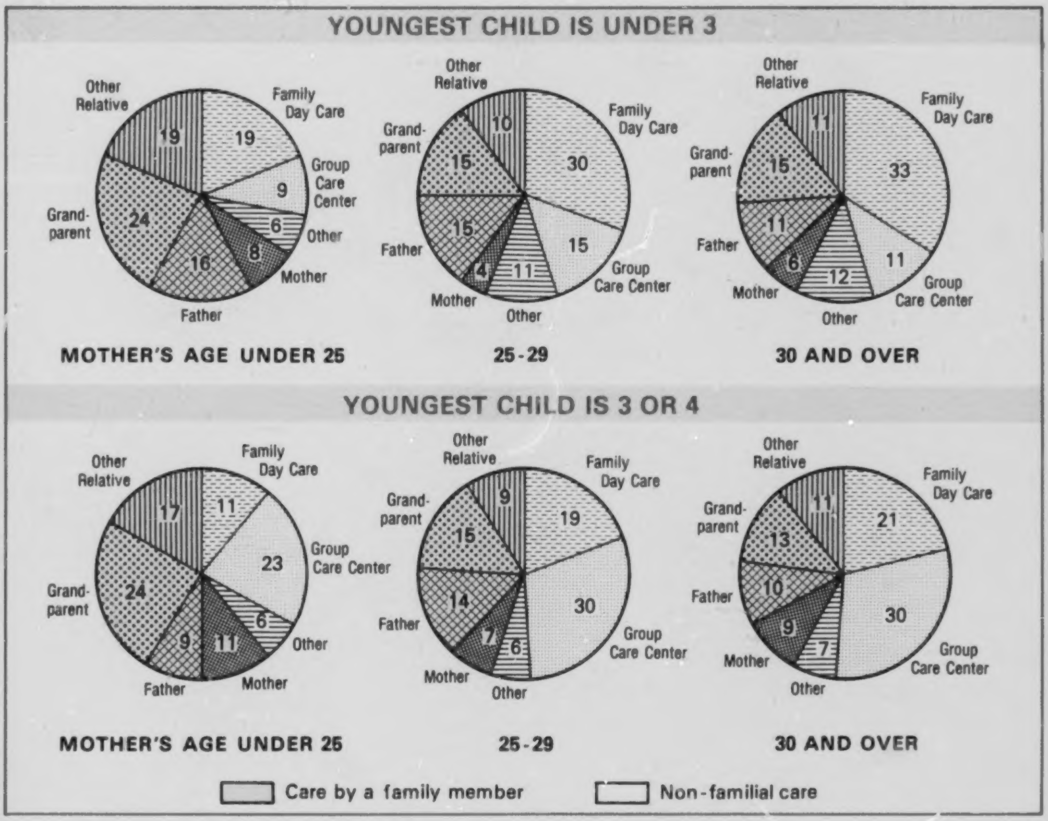
With no national policy or programs for child care, the arrangements parents must make are individualized and often ad hoc. In 1982, as Table 7 shows, 71 percent of the youngest children under five of married mothers working full time were cared for during the day in their own or another private home—41 percent by fathers or other relatives, and 30 percent by nonrelatives. Day-care centers and nursery schools ("group care centers" in Table 7)—some nonprofit, others costly commercial ventures, and all with waiting lists—still accommodated only 17 percent of these children in 1982.

Older working mothers of small children are much less likely than younger mothers to rely on fathers, grandparents, and other relatives for child care while they work and more likely to depend on day-care centers or "family day care"—care by a nonrelative in a private home other than the child's. In 1982, as Figure

> Mother, contract supervisor, 34; father, purchasing director, 30; firstborn, 6 weeks:
>
> On child care, mother: "About three weeks ago, I looked at him [the baby] and thought, 'How can I leave him?'" Father: "What do you do? You can't take the little guy to work with you . . . . So you just go out and find the best person you can."
>
> —*The Washington Post Magazine*, June 24, 1984

Figure 6. Child-Care Arrangements for Youngest Child Under Age 5 of Married Mothers Working Full Time, by Ages of Mother and Child: 1982

(Numbers in percent)



Source: Bureau of the Census, June 1982 Current Population Survey, unpublished tabulations.

Note: Family day care = care by a nonrelative in a home other than the child's.
Group care center = day-care center or nursery school.

6 shows, 43 percent of married mothers age 30 or more who were working full time and had a child under three reported that the child was cared for during the mother's working hours by a family member (including 6 percent by the mothers themselves), while 67 percent of their counterparts under 25 reported these arrangements. Forty-four percent of the mothers over 30 said their infants or toddlers were sent to day-care centers or family day care, both of which are more costly than care given by a relative; only 28 percent of the youngest mothers gave this response. These differences were very similar for children ages three or four. Older mothers may have better-paying jobs and be more able to pay for nonfamilial care, or perhaps may live farther from relatives.

Only an estimated 1,000 companies were offering child-care assistance to employees in 1984, although the number has doubled since 1981 when tax laws were rewritten to allow child care as a nontaxable employee benefit.[28] Most of

Child care is generally the mother's responsibility and her job may have to bend in some way.

this is underwriting of the costs of child care arranged for by parents themselves, and many firms now operate child-care information and referral services. Only about 400 companies, mostly high-tech firms, hospitals, or manufacturers of children's products, had on-site day-care centers in 1984. Child care is expensive and most businesses still hesitate to subsidize this benefit without some indication that worker productivity will increase.

Thus, the care of small children remains primarily the responsibility of individual families and generally within the family the responsibility is the mother's. It is the wife's job that must bend in some way, although some fathers are now adapting their jobs to share the load. So far, it is the employees considered most valuable to their employers who usually have the options of flexible working arrangements and subsidized child care. But it is likely that the growing ranks of working mothers will force more and more employers to offer these options to all employees as a matter of course.

The effect of child care on children is of major concern to child development specialists, parents, policymakers, and service providers. Research on these effects shows that a sweeping question, such as "Is child care good or bad for young children?", is not as important as more detailed questions about the fit between type of care and individual children's needs or the specifics of the care, such as the optimal number of children per adult and sanitary provisions. A major gap in the research on the effects of child care stems from the emphasis on children cared for in day-care centers or nursery schools. It is important to understand the effects of these types of care, especially since they can be more easily regulated. But much more needs to be known about the welfare of the vast majority of small children of working mothers who are cared for by other family members or in a group in the home of a nonrelative.

Education

Education is closely related to delayed childbearing; the more education a woman has the more likely she is to delay both marriage and childbearing.[29] One obvious reason for this association is that education demands a time commitment.

A measure of American women's increasing educational attainment in the past two decades is the steep rise in the proportion of women obtaining graduate degrees. Between 1962 and 1982, the proportion of master's degrees earned by women increased from 33 to 51 percent and among doctoral degrees, women's share rose from 11 to 32 percent.[30]

Why are women getting more education? One reason, applicable to both men and women, is that, with schooling more widely available, jobs which formerly demanded, say, a high school education, now require some college training. Similarly, social norms on acceptable levels of education have been upgraded. Where once a primary school education was acceptable, a high school diploma is now demanded. Where graduation from high school signaled achievement, a college degree is now the basic goal among middle class families. These changing norms are partly a response to changes in the minimum requirements to fill certain jobs. For women, another explanation is their increased opportunities in professions formerly dominated by men, such as medicine and law. In 1960, women received only 6 percent of the medical degrees conferred, 2 percent of law degrees, and a negligible proportion of dentistry and engineering degrees. In 1982, women's shares were up to 25 percent of medical degrees, 32 percent of law degrees, 14 percent of dentistry degrees, and 10 percent of engineering degrees.[31]

Beyond the simple competition of time, increased education can also lead to delayed childbearing by broadening horizons, imparting new values, changing aspirations, and creating new skills, all of which can motivate an individual to try other options before settling into parenthood.

Population dynamics

As we have already seen, the disproportionate size of the baby boom generation has worked against them in their efforts to get comfortably established in the working world and has probably been a factor in delayed childbearing. Another twist in this chain set off by population dynamics is what demographer Paul Glick labels the "marriage squeeze"—a phenomenon caused by a shortage of men relative to the number of women in the prime ages for first marriage (18-25 for women and 20-27 for men).[32] The shortage came about because the number of babies born each year as the baby boom mounted from 1947 to its peak in 1957 was larger than the number born the year before and women tend to marry men about two years older than themselves. When women born during these ten years reached the usual ages for marriage, there was an insufficient number of men about two years older than themselves from which to choose their mates. Many of these women at the vanguard of the baby boom either had to select men who were not two years older or defer marriage—and childbearing along with it. Now the squeeze has reversed; men born between 1957 and 1964 as the baby boom waned are finding fewer women two years younger than themselves from which to select wives. Sociologist Robert Schoen, with a method devised to measure the marriage squeeze, calculates that it will have had little effect on the overall level of marriage in the baby boom generation, but has indeed affected the timing of their marriages.[33]

The baby boom generation's delayed marriage and childbearing fit well with economist Richard Easterlin's theory that the relative size of a birth cohort strongly affects its life experiences.[34] The parents of the baby boom generation, he observes, come from the relatively small cohorts born during the depression of the 1930s. This, plus the booming post-World War II economy, meant that the men of that generation had no trouble securing good jobs when they entered the labor force. Further, their ideas of what constituted a good income and living standard, shaped as they grew up during the depression, were modest. Marriage and family-building consequently came early. The large baby boom generation has experienced the reverse as they have reached young adulthood, Easterlin points out: there are more of them than there are good jobs. But growing up during the prosperous 1950s and 1960s, they nurtured high expectations for their future living standards. So many of them have been deferring marriage and childbearing as they struggle to match their lives with their expectations.

Easterlin's theory presumes that people's views about marriage and children have not changed and women are not strongly attached to the labor force. He predicts that when the cohorts born during the baby bust of the 1970s reach young adulthood, their smaller numbers will once again boost job and earnings opportunities for young men, marriage and childbearing will again come early, and women will retire to raise their children.

Other researchers concede that Easterlin's theory has much validity and admire its elegance, but stress that norms and customs are changing. These changes, they argue, will prevent another repetition of the cycle.[35] Few expect women to leave the labor market, which they have recently entered in such large numbers, to stay home while they raise their children. With their increasing opportunities in the work place and commitment to careers, this would be too costly a choice.

Medical and Health Issues

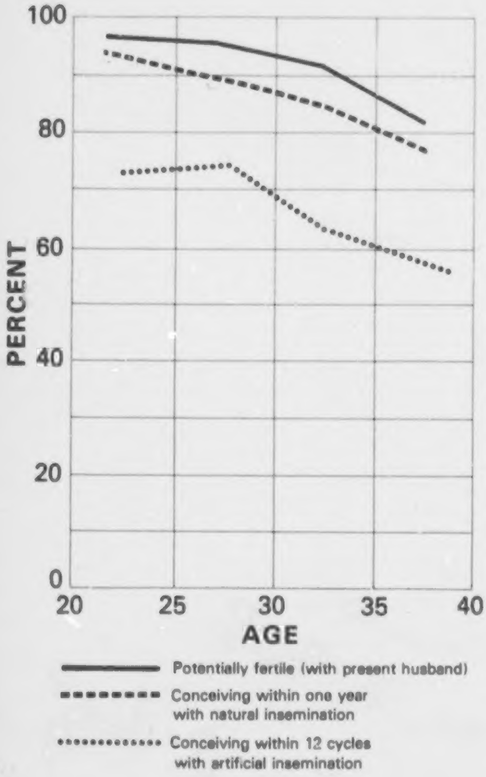
Many women who decide to delay childbearing past age 30 worry whether their decision will jeopardize their chances to conceive and bear a healthy baby. Are these fears well founded?

Infertility risks

The fears of infertility at later ages were not allayed by the wide publicity given to a French study reported in 1982 in the *New England Journal of Medicine,* which suggested that the risk of infertility begins to rise sharply as early as age 30, five years sooner than had been popularly supposed.[36] Conducted by the Federation CECOS, the study tracked the conception rates of 2,193 childless wives of infertile men who had been artificially inseminated with donor sperm. After 12 menstrual cycles, approximately 74 percent of the women under age 31 had conceived. The percentage dropped to only 62 for women aged 31-35 and to 56 for women 36-40. Although this study has advantages—in particular, it eliminated the need to control for patterns of intercourse and husbands' ages—its shortcomings were quickly pointed out by Population Council demographer John Bongaarts.[37] Artificial insemination is much less likely to result in conception than natural insemination, he argued, and a year is too short a time to capture the full proportion of women who will eventually conceive. From data reported in the 1976 U.S. National Survey of Family Growth, he estimated married women's conception rates after a year of intercourse without contraception to be much higher at all ages than those of the French study: 93 percent at ages 20-24, 89 percent for women 25-29, 84 percent at 30-34, and 77 percent for women 35-39. (Compare the middle and bottom curves of Figure 7, page 24.) Based on studies of noncontracepting historical populations, he concluded that potential long-term conception rates at successive ages are higher still (top curve of Figure 7). These translate into 4 percent of women unable to conceive at ages 20-24, 6 percent at ages 25-29, 9 percent at ages 30-34, and 20 percent at ages 35-39. Bongaarts adds that these estimates based on historical populations may in fact "be conservative to the extent that modern medical technology can eliminate some previously untreatable causes of infertility."

Bongaarts' findings were questioned in turn by three researchers at the National Center for Health Statistics who pointed out that his historical samples included many older women who had already had children and one—the Hutterites—thought to be particularly fecund.[38] Princeton demographers Jane Menken and Ulla Larsen tried to resolve the dispute, using several reliable historical data sets.[39] They confirm Bongaarts' findings that infertility does rise with age, but only moderately before age 35. Their estimates are that 6 percent of women are unable to conceive at ages 20-24, 9

Figure 7. Percent of Women Conceiving Within One Year with Artificial and Natural Insemination, and Percent of Women Potentially Fertile, by Age



Source: John Bongaarts, "Infertility After Age 30: A False Alarm," *Family Planning Perspectives*, Vol. 14, No. 2 (March/April 1982) Figure 2, p. 77. Reproduced with permission.

Note: The data on natural fertility are based on age-groupings of 20-24, 25-29, etc.; data on artificial insemination are based on age-groupings of 21-25, 26-30, etc.

percent at 25-29, and 15 percent at ages 30-34. After that the percentage rises sharply to 30 among women 35-39 and 64 at ages 40-44.

The debate stirred up by the CECOS study suggests that although that study clearly overestimated the increased difficulty of conceiving after age 30, women who are deferring a first birth to their mid-thirties should be aware that they may encounter some difficulties. Some researchers argue that even at this age a woman is likely to have little trouble conceiving, providing she is in good health and free from fertility impairments that can occur at any age (of which the two most common causes—endometriosis and pelvic inflammatory disease—can be revealed by awareness of one's own body and regular gynecological check-ups, and treated).[40]

Pregnancy and delivery risks

If a woman waits until she is a little older to have a first child, can she expect more problems with pregnancy and delivery? Many researchers have examined the effects of a mother's age on the course of pregnancy and labor. Obstetricians generally agree that ideally, women should begin childbearing before age 35.[41] Since currently 95 percent of first births to American women age 25 and older are to women aged 25-34 (see Table 1, page 6), most women who defer childbearing do not have to be concerned. A recent study of Swedish birth data revealed that women over 30 are more likely than younger women to have a late miscarriage (after 27 weeks) with a first pregnancy but no more likely to have a firstborn die in the first 28 days of life.[42] Demographer Dorothy Nortman, in a 1974 review of the effects of parental age on pregnancy outcome, also found that the unfavorable odds increase with age, but not so much as to deter older women from a first pregnancy.[43] As long as a woman is in good physical shape and receives proper nutrition and care during her pregnancy, age should not be a major concern. Another recent study supports this conclusion. Reported in 1980, this study compared experiences during delivery of a group of women 35 and older having a first birth with those of women aged 20-25 having a first birth and women 35 and older having a sec-

> Dr. Cecil Jacobson, reproductive biologist, pioneered research in amniocentesis:
>
> Sees a link between women's concern with diet and fitness and the drop in prematurity rates. "Women are in far better shape at 35 than they used to be."
>
> —*The Washington Post*, January 16, 1984

ond or later birth and concluded that having a first birth at age 35 or more does not automatically mean that a woman incurs a high risk of having a difficult pregnancy and labor.[44]

Risk of birth defects

Are women who are older at first birth at greater risk of bearing children with birth defects? This question is often asked by women trying to decide if they can delay childbearing a little longer.

Birth defects have many causes. They can be caused by hereditary disorders, such as Tay Sachs disease, by drugs like thalidomide taken early in pregnancy, by exposure to certain viral infections, such as rubella, early in pregnancy, or by chromosomal error. Of the causes of birth defects, only chromosomal error is known to be linked to the mother's age at birth. The press coverage lavished on Down syndrome—one of the most common chromosomal abnormalities—has tended to make mother's age seem a more important factor in birth defects than it is.

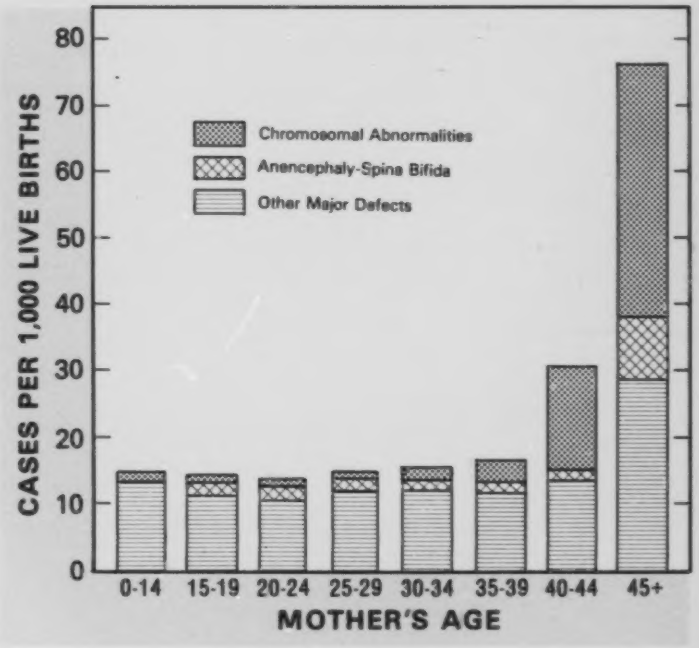
About one of every 16 children is born with some type of birth defect; many of these, however, are not serious.[45] Tracking the prevalence of birth defects is difficult because official statistics, based on birth certificates, record only those defects that are diagnosed at birth or shortly thereafter. Many defects like deafness, for example, may not be apparent until the child is older. A recent National Institutes of Health report estimates that major defects occur with 3 to 5 percent of births.[46] Thus, between 110,000 and 184,000 of the 3,680,577 babies born in 1982 in the U.S. had a serious birth defect. Some of these were genetic disorders, such as cystic fibrosis, muscular dystrophy, and sickle cell anemia; some were congenital malformations, of which spina bifida is probably the most familiar; and some were Down syndrome and other lesser known chromosomal abnormalities.

Dorothy Nortman, in her review of the literature relating mother's age to pregnancy outcome, estimates that chromosomal abnormalities occur in one of every 250 conceptions. About 88 percent of these are aborted spontaneously, however, often before a woman even knows she is pregnant. The overall risk of actually giving birth to an infant with a major birth defect potentially linked with a mother's age—a chromosomal abnormality—is well under one per 100 births. However, there is clear evidence that this risk increases with the mother's age at birth, as seen in Figure 8 (page 26). This study of births in Atlanta between 1968 and 1975 estimates the rate of chromosomal abnormalities at 1 per 1,000 births (0.1 percent) for mothers under age 35, rising to 3 per 1,000 (0.3 percent) at ages 35-39, 16 per 1,000 at ages 40-44 (1.6 percent), and 38 per 1,000 (3.8 percent) at 45 and over. All births in this study were to mothers who already had children.

Improved techniques of prenatal diagnosis can now detect fetal abnormalities, whether or not associated with a woman's age.[47] This makes possible a decision to abort a defective fetus, if that course of action is chosen, or to operate on the fetus during pregnancy or on the baby immediately after birth. With advance warning of severe birth defects, surgical teams can be in place at the birth and parents can be better prepared to cope with the special problems they will face.

Amniocentesis and ultrasound are the two best known prenatal diagnostic techniques; a promising new one, chorionic villi sampling, is currently being tested.

Figure 8. Incidence of Major Birth Defects by Mother's Age: Atlanta, 1968-1975



Source: Marshall F. Goldberg, Larry D. Edmonds, and Godfrey P. Oakley, "Reducing Birth Defect Risk in Advanced Maternal Age," *JAMA*, Vol. 242, No. 21 (1979) Figure 1, p. 2293.

These techniques are not the only ones used and are not for use with all pregnancies. Because there is a certain amount of risk involved with any medical procedure, these methods are to be used primarily for pregnancies known or thought to be at higher risk of certain disorders.

Ultrasound—an image of the fetus and surrounding uterus made with high-frequency sound waves—is useful as an adjunct to amniocentesis and also to pinpoint the stage of pregnancy, detect multiple pregnancies and fetuses that have died and not already been spontaneously aborted, and evaluate uterine abnormalities that might cause problems.[48] Now under clinical research is its use with a mid-trimester pregnancy to detect defects in the fetus' body structure or internal organs.

Amniocentesis, developed in the late 1960s, is currently used by 30 to 40 percent of pregnant women aged 35 and older and an increasing number of younger women.[49] It is usually performed between the 16th and 18th weeks of pregnancy. In the test, a sample of amniotic fluid is withdrawn from the uterus by a needle inserted through the abdominal wall and the fetal cells in the fluid are examined in a laboratory. Obtaining results takes up to three weeks. The procedure is done in the physician's office, usually under local anesthetic.[50] Ultrasound is recommended before amniocentesis to establish the positions of the fetus and the placenta. The procedure carries little risk of miscarriage or other serious complications.

Chorionic villi sampling involves inserting a thin plastic catheter through the cervix to withdraw a sample of chorionic villi. The chorion is a membrane, originating from the embryo, that surrounds the fetus and later becomes part of the placenta. Villi are minute coral-like forms covering the surface of the chorion. Because they are embryonic, analyzing them provides much of the information obtained with amniocentesis. And because the sample is larger than that obtained through amniocentesis, the tests can be performed more quickly, often within a week, which reduces the stress of waiting for test results. Also, since the procedure is performed between the eight and tenth weeks of pregnancy, an abortion can be performed in the safer first trimester of pregnancy if results indicate severe birth defects and the decision is made not to carry the fetus to term. More than 20 test centers in the U.S. are likely to be performing this procedure by the end of 1984 and it is expected to replace amniocentesis for most prenatal diagnosis by the end of the decade.[51]

The man's role

The mother's role in the birth process is so obvious and important that few studies have examined the man's contribution. Without him there would be no pregnancy and he provides half of the genetic material for the child. Yet little is known about changes in his fecundity with age or his effect on the outcome of the pregnancy. Because men and women who marry tend to be close in age, it is difficult to separate the effects of a father's age from the well-known effects of a mother's age. A few studies, however, provide some clues.

Barbara Anderson used the 1911 census of Ireland to examine changes in a couple's fertility by the man's age, controlling for age of the wife and length of the marriage.[52] These data were selected because age differences between husbands and wives were substantial at the time and had been for the 20 years before the census and couples practiced no birth control that would mask changes in the husband's fecundity. Her analysis suggests that men's ability to impregnate a woman declines steadily after age 40.

More recent research which provides some support for this finding analyzed the characteristics of semen, carefully controlling for the time since last intercourse before collection of the semen, an important factor in variation.[53] This study found an inverted U-shaped pattern in semen quality; a gradual improvement in quality up to age 25, followed by a plateau between ages 26 and 35, and then a decline. The most marked changes occurred in the 41-45 age group, which coincides with the decrease in male fecundity beginning in the early forties which Anderson noted. (Nortman, in her 1974 literature review, also noted that the few then existing studies suggested that the quality and quantity of sperm deteriorate with a man's age.)

Men, like women, can have physiological problems which make conceiving a child difficult. With male infertility, the commonest problems are low sperm count, blocked sperm ducts, and defective sperm. About 40 percent of diagnosable cases of infertility can be attributed to the man and 20 percent to both partners.[54]

Generally the father's role in pregnancy outcome is related to congenital conditions. Genetically defective sperm, for example, are one cause of early miscarriages.[55] Some research indicates that paternal age may be more important than maternal age in some forms of Down syndrome, although not all researchers agree with this.[56] Research not focusing on age suggests that about 24 percent of Down syndrome cases could result from early chromosomal error in the father.[57]

Gene mutations which can cause birth defects seem to be more prevalent the older the father is. Although the reasons for this are not clear, it could be that since sperm are produced throughout a man's life, there is much room for error and mutation, perhaps influenced by environmental factors. This possibility is at the center of the controversy over Agent Orange, the defoliant used during the Vietnam War, which veterans charge has caused serious birth defects in their children. "Fresh" gene mutations are not possible with a woman whose stock of oocytes from which an egg is formed each month is with her from birth. Overall, gene mutations are relatively rare and it seems that mother's age is a more important factor in pregnancy outcomes.[58]

Dealing with infertility

Infertility, defined as the inability to conceive after a year of regular sexual intercourse without contraception, is estimated to affect 15 percent of American couples.[59] Some of these are couples who already have had one or more children but have difficulty conceiving an additional one. What recourse is there for couples who have trouble conceiving when they decide they are ready for a child? Some of these couples do not pursue the matter further and join the permanently childless population. Others seek medical attention; progress in diagnosing and treating infertility has been rapid in the past decade. There are also alternative routes for becoming parents when one parent is sterile; two of these are artificial insemination and surrogate motherhood. If the woman is ovulating but her fallopian tubes are blocked, she might consider in-vitro fertilization. Before a couple resorts to such methods, however, they generally seek help from an infertility specialist.

Infertility can be caused by an assortment of factors that interfere with the reproduction process. The problems may be subtle and by themselves only slightly reduce fecundity, but combined with other subtle problems could lead to substantially reduced chances of conception. Thus diagnosis involves examining both partners.

An infertility evaluation can take as little as two months but is generally performed over several months or even years, depending on the wants and needs of a particular couple. Because so many factors can be involved, there is no standard procedure followed by every specialist in every case. In the initial interview, the couple and the specialist discuss the couple's medical history, their concerns, and procedures they might try. Before this meeting, it is helpful if the woman has kept a record for the past month or two of her basal body temperature (the temperature before getting up in the morning, taken orally or rectally), noting on it the dates of intercourse, any unusual pain, and changes in the character of her cervical mucus. This chart will enable the physician to determine whether the woman is ovulating and aid in deciding the best course of action to pursue.

Procedures commonly performed during an infertility evaluation include the following:

Hysterosalpingography. This office procedure reveals any abnormalities of the uterus or fallopian tubes and may flush away obstructions in the tubes. A water-soluble dye is injected through the cervix into the uterine cavity and tubes and these areas are then X-rayed.

Semen analysis. Semen from the male partner is analyzed to determine its quality, quantity, and motility. A sample of blood or cervical mucus from the woman may be analyzed along with the sperm if it is suspected that she may have antibodies or allergies to the sperm.

Post-coital exam. In this procedure, the woman's cervical mucus is examined after intercourse during her peak fertile period. The test reveals if there is enough cervical mucus to carry the sperm to its destination. It also measures the acidity of the mucus and the ability of the sperm to survive and move through the mucus.

Endometrial biopsy. This office procedure determines if a woman is ovulating by examining a small segment of the endometrium, the lining of the uterus.

Laparoscopy. In this surgical procedure, the abdomen is distended by carbon dioxide and a small endoscope inserted through the navel, enabling the surgeon to view the pelvic organs. It is generally used if pelvic adhesions are suspected or when all other tests have returned normal and pregnancy has still not occurred.

It is estimated that about half of the couples who seek help from a specialist will conceive, about 10 percent will be infertile for no apparent reason, and the remaining 40 percent will have some problem that permanently prevents them from becoming parents.[60] The medical technology that is so widely publicized is usually resorted to only by couples who are unable to have children in any other way.

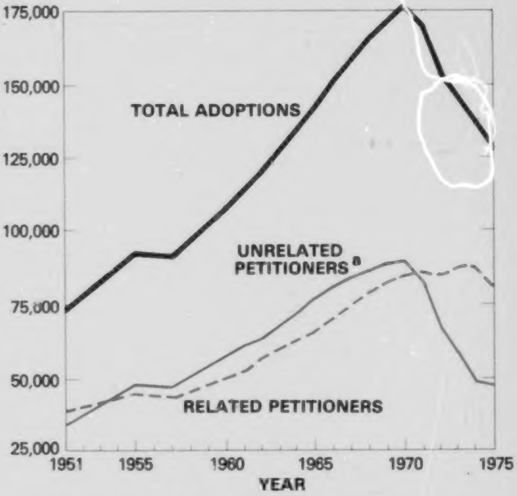
Artificial insemination has been widely practiced for the past 40 years, using the husband's or a donor's sperm. Donor sperm is more common since this method is usually a means of circumventing a man's infertility. As the term indicates, the sperm is artificially deposited at the mouth of the woman's cervix. The method produces an estimated 10,000 to 20,000 births annually in the U.S.[61]

In-vitro fertilization. Baby Louise Brown, born in 1978 in England, is the first and the best known of the so-called "test-tube babies." By the end of 1984, some 1,000 other children will have been born who were conceived in the same way, including about 100 in the U.S.[62] This technique is used when the woman is ovulating and her husband is fertile, but they are unable to conceive because of irreparable damage to her fallopian tubes. Several eggs are surgically removed from the woman's ovaries and then fertilized in a shallow laboratory dish with the husband's sperm. A few days later, one or more of the embryos is implanted in the wife's uterus. It is possible to use donor sperm or donor eggs in the procedure.

Surrogate motherhood. This highly publicized and controversial procedure has produced some 100 to 150 babies in the U.S. since the late 1970s.[63] It is an option for a woman who is physically unable to conceive and carry a pregnancy to term. A second woman is fertilized with the husband's sperm by artificial insemination. She carries the child to term and then gives it to the original woman and her husband.

Embryo transfer. This method, devised for women who are able to carry a child but unable to produce eggs, has produced at least two live births to date in the U.S.[64] A second woman is inseminated with the husband's sperm. About five days later, the fertilized egg, or embryo, is washed out of her uterus and placed in the wife's uterus. It is then the wife who carries the pregnancy to term. Essentially the second woman is donating an egg.

Figure 9. Adoptions in the U.S.: 1951-1975



Source: Penelope L. Maza, "Adoption Trends: 1944-1975," *Child Welfare Research Notes*, No. 9, August 1984, Figure 1.

[a] Excludes adoptions by related individuals, e.g., a man adopting his stepchildren.

Adoption

Adoption, another way to enter parenthood, has received much attention in recent years as the number of babies available for adoption has apparently dropped steeply while the demand for them remains high. In earlier decades, maternity homes flourished as a way for unmarried women to bear their children and place them for adoption. Pregnant single women are now more likely to keep their children or to have abortions. Estimates of the number of adoptions in the U.S., available only through 1975, show a sharp decline after 1970 (see Figure 9).

With no recent national data or standardized procedures, adoption is a complicated issue. The total number of babies available for adoption, the number actually adopted, and their characteristics are unknown, as is the demand for babies to adopt. Procedures and record keeping vary from state to state and few statistics are published. Adoption may be channeled through church groups, state welfare agencies, or lawyers' offices. Some information is collected on international adoptions. In 1983, the State Department recorded 7,350 adoptions of non-U.S. citizens; 4,545 of these were Korean nationals.[65]

Couples who decide to adopt must contact several groups, or—if they prefer to adopt privately—lawyers who specialize in adoptions. Many agencies have restrictions on whom they will consider for adoption. Church-sponsored agencies, for example, often require a couple to be a member of a particular religion. Often there are limitations on how old a couple can be, which can rule out couples who have delayed childbearing and find out too late to qualify for an adoption that they are infertile. Although private adoptions do not have these restrictions, the natural mother has the final say in who gets the baby. And generally she is allowed a certain amount of time to change her mind before the adoption is final. Thus private adoption carries its own risk.

Support networks

Many couples who are involuntarily childless and those considering adoption feel isolated. Undergoing an infertility evaluation can strain a marriage. Holidays can be particularly difficult for the childless couple. Couples considering adoption may find family and friends unsympathetic, particularly if they are able to have children but choose instead, or in addition, to adopt. To help childless and adopting couples cope with their special problems, several support groups have been formed in recent years. Among these are:

RESOLVE, Inc. (P.O. Box 474, Belmont, MA 02178), a nonprofit organization with 43 chapters nationwide, provides counseling, referral, and support to infertile couples. It maintains a list of specialists in infertility as well as information on techniques used to diagnose and overcome infertility, and also provides information on adoption.

Ours, Inc. (3307 Highway 100 North, Minneapolis, MN 55422), with 100 chapters nationwide, provides advice on adoption procedures before adoption and support and special activities for families after adoption. Most members have adopted children from other countries, but couples adopting American children are welcome to join.

NACAC (North American Council on Adoptable Children, 810 18th Street N.W., Washington, DC 20006), an umbrella organization for 600 parent groups, maintains lists of parent groups and agencies who can provide before- and after-adoption help to couples adopting American children with special needs: those with physical, emotional, or mental disabilities, sibling groups, minority children, or older children.

Delayed Childbearing and Family Life

Couples who delay childbearing are a diverse group, as we have seen. They include couples who had their firstborns right when they planned to, those who would have preferred them earlier but felt they could not afford children, and others who married at later ages but would have married sooner if they had found suitable mates. Delayed childbearers also come from all racial, ethnic, and socioeconomic groups, but the largest proportion are white, highly educated, two-career couples. Because their backgrounds and experiences differ from those of couples who started their families early, one might expect their family life, behavior, and attitudes to be different. They are likely to have high aspirations for their children and more to spend on providing them with expensive material goods and education. However, there is little research so far on the implications of delayed parenthood for family life. Because of this and the diversity of the group, we must be cautious about making generalizations, but there are studies in a variety of areas that provide some insights.

Marital relations

Although the U.S. divorce rate has leveled off in the early 1980s, this has followed a dramatic two-decade climb, from about 10 divorces per 1,000 existing marriages in 1960 to just under 24 per 1,000 in 1980.[66] Have the couples who have deferred childbearing been experiencing these high rates of divorce?

Several researchers have shown that the older a person is at marriage the less likely he or she is to separate or divorce.[67] Since much of today's delay in childbearing stems from delayed marriage, it seems likely that separation and divorce rates are lower among delayed childbearers than they are among couples who have their children earlier. However, we do not know what proportion of the couples who have married and started families at older ages have previously been married. Disruption rates are higher in remarriages, probably because these people have already accepted divorce as a resolution to an unhappy marriage. If the proportion of remarried couples is large, this might offset some of the stability due to later ages at marriage.

What about couples who do not delay marriage but do delay the first birth for a long time after marriage; are they less likely to separate or divorce? There is reason to suspect that they are. To be counted in this category, a couple must already have survived several years of marriage, and disruption rates are highest in the early years of marriage. The period without children allows them time to establish themselves as a couple. And they are more likely than younger first-time parents to have planned the birth so it will not be as disruptive a factor in their lives.

Director, Parents Over Thirty project:

"Older parents are shocked at the changes which strain the marriage . . . . The Super Parent syndrome sets in. Each expects the other to be perfect, and the child better be, too. All kinds of unrealistic expectations build up . . . . [When both parents have careers] How can they possibly do it all and still maintain the intensity of their lives together? They simply can't."

—*USA Today*, July 9, 1984

If disruption rates are indeed lower among delayed childbearers, does that mean marital satisfaction is higher? No research has looked at this issue. Certainly the additional time without the responsibilities of parenthood allows these couples more time to understand and gain confidence in themselves as individuals and in each other and to learn how to function effectively as a couple. On the other hand, many of these couples are now juggling demanding careers and childraising. They are the leading edge of today's young men and women who are trying to define new roles for themselves both within and outside the household. They have high expectations for both themselves and their children. The complexity of their lives and the goals they have set could lead to dissatisfaction or frustration at not being able to handle all their responsibilities equally well.

On the other hand, these couples may

Woman lawyer, 34; firstborn now 2:

"The price [of the child] is very high; the emotional turmoil, the exhaustion, the frustration of having too many things to do and not enough time."

—*The Washington Post*, August 27, 1984

find that the benefits of delayed parenthood outweigh the costs. A recent study that interviewed couples about to have a first child in their thirties and similar couples who had opted not to have children found that the pregnant wives expected more benefits as well as costs to having children than their husbands did, but both the parents-to-be and the childfree couples perceived more costs than benefits in parenthood.[68] However, when the delayed parents were reinterviewed six to eight months after their baby's birth, it appeared that they now felt parenthood would bring more benefits than they had expected, especially the men. The authors note: "The psychological impact of parenthood has been powerful and positive for these men and women and, in general, something they did not expect nor for which they were prepared." These couples now saw themselves as more experienced, more patient, and much better able financially to become parents than they would have been in their twenties. One new father put it: "I would have felt deprived if I couldn't have gone to the beach with a keg of beer and the boys when I was in my 20's. But I've done all that and so it seems trivial now."

Family size and childspacing

Women who are older at first birth generally have fewer children altogether than women who begin earlier. One reason is biological: they have fewer years left in which to bear children. But they also tend to prefer smaller families. In recent years, however, the two-child family seems to have become established as the preferred norm in the U.S., so the timing of births rather than their number is now the more interesting question.

There is one small contradiction to the adage, "Later means fewer births"—that is the chance of having a multiple pregnancy. About 1 percent of all pregnancies end in multiple births, mostly twins. Identical twins appear to occur randomly, but the occurrence of fraternal twins (a boy and girl or nonidentical twins of either sex) varies by family history, race, the number of children the mother has already had, and her age. The chance of bearing twins increases with the number of children a woman has had, but irrespective of this, women 35-39 have the highest rates. Women aged 35-39 are twice as likely to have twins with their first pregnancy as teenagers are (1.36 versus .63).[69]

The chances of having fraternal twins go up for older mothers.

Taking a fertility drug also increases a woman's chances of having a multiple pregnancy. The chances vary according to the drug and high order multiples can and do occur; of the 11 living sets of quintuplets in the U.S. as of March 1984, nine were conceived after their mothers had taken fertility drugs.[70] But the most likely multiple birth is still twins.

The spacing between children is sometimes left to chance, but often couples weigh the alternatives and choose what seems best for them, although they may not always be successful. Two children closely spaced have advantages, particularly for a mother who wants to remain in the labor force. She will have fewer years with preschool children and consequently fewer years when she has to stay home or find suitable child care for large portions of the day. On the other hand, closely spaced children also mean there is less time to enjoy each child separately and the demands of two very young children can be extra tiring. And later on there can be the financial burden of having two children in college at the same time. Research suggests that parents spend less per child when children are closely spaced, but the difference between a one-year and a four-year interval is only 5 percent.[71]

Parent-child relations

A woman who is 20 at the birth of her first child will be 36 when her child is 16. A woman who is 35 at first birth will be 51 when her child is 16. What do these age differences mean for relations between parents and children? Will the older mother find she is too tired to cope with the demands of a teenager? Will the age gap between them seem overwhelming? Sociologist Alice Rossi explored these questions with a small, nonrepresentative sample of women in intact families.[72] She found that the older a woman was at the birth of her first child, the more difficult she found childrearing to be, not only at the infant and toddler stages, but also during adolescence. The reasons for this are not clear. If women feel they started childbearing too late, they might constantly feel the stress of being out of step. Or it is possible that these women have generally felt in control and have planned their lives but now find that raising children is often unpredictable and disorderly. These results are not conclusive. Understanding the importance of parental age for the relations between parents and children will require more studies using larger, more representative samples.

The older mother may be "winding down" as her child is "winding up," but will this strain their relationship? Perhaps the presence and needs of a child will avert a "midlife crisis" for her. Certainly her life will be full, with little time to worry about what is coming next, and her greater experience and maturity should be of help in coping with difficulties that arise. Most likely, too, she will have more money so she can purchase some relief from the demands of housework and childrearing.

Erma Bombeck (three children born between ages 26 and 31):

"It probably sounds like a lot of fun having a baby who will sit around and connect liver spots on Mommy's arm . . . . [But] just when the baby is outgrowing the need for naps, you'll grow into them. When his teeth start growing in, yours will start coming out . . . . There is no doubt in my mind I will race my grandchild for the baby food."

—*The Philadelphia Inquirer*, July 22, 1984

Mother, potter, 39; attorney father, 40; firstborn, 9 months:

"The baby will keep me younger . . . . [For my husband] it made 40 great . . . . We both feel that the midlife crisis will be eased."

—*The Philadelphia Inquirer*, July 22, 1984

Child psychologist:

"They [older parents] have experienced more, know more . . . . These kids are being nurtured by parents who are functioning at their peak."

—*USA Today*, July 9, 1984

Family economic well-being

Do couples who have delayed children spend more on them? This seems likely from the outset since they will already have been able to accumulate more assets before the first birth with both parents working longer at generally better-paying jobs. Once childraising begins, Urban Institute economist Thomas Espenshade has shown that parental expenditures go up the longer the first birth has been delayed. Using as his example a "medium-income" family with two children and the wife working part time, he calculates that to raise the children to age 18 such parents would now spend an average $80,300 (in 1981 prices) per child if the wife is age 22 when the first child is born, $82,800 if the wife is 27, and $83,200 if the wife waits until she is 32.[73] Couples' earnings go up as they move through their twenties and thirties, so "children who are born later in their parents' lives are being reared at a time when their parents have higher earnings," Espenshade explains.

He finds that delaying the first birth increases subsequent expenditures on children more in higher income families than it does in those in the lower income brackets. In middle- and low-income families, children delayed until the wife is 32 reach their most expensive years after the father's earnings have peaked at age 44 and begun to decline. In higher income families, Espenshade calculates that husbands' earnings peak around age 49, so there is more money to spend just about the time children born when the wife is 32 and later reach their expensive years. It could also be that couples in the upper income brackets prefer to spend more of their income on their children. They may place more emphasis on education, for example, and be more likely to send their children to private schools and purchase expensive learning tools like home computers.

In his study, Espenshade includes the wife's income but not her "opportunity costs"—usually measured as the income a woman foregoes if she stays home to raise her children rather than working. Opportunity costs are difficult to measure not only because they require estimating the earnings capacity of a woman who is not working, but also because the woman is not only foregoing income but also experience. The time she takes out of the labor market may cost her more than just the immediate income she is foregoing; she may not be competitive with other workers when she returns so that she earns less in the future than if she had never left the market place. If these things are considered, then children of higher income couples who have delayed childbearing are potentially even more costly than what Espenshade estimates. Wives in such families are likely to have had more prestigious jobs, however, so if they do decide to stop working temporarily after their children are born, they may have more flexibility in setting their hours when they return to work, which will make it easier to combine parenting and a career.

Are there any long-term economic consequences of starting childbearing at later ages? The only way to answer this question immediately is to look at delayed childbearers who are now older. They delayed childbearing during earlier decades and their experience may be different from that of today's delayers because their reasons for delay could have been quite different. With this caveat in mind, sociologist Sandra Hofferth examined the long-term economic consequences for women who delay childbearing.[74] She notes that the timing decision is confused by the number decision; in the past, at least, women who delayed childbearing tended to have smaller families than those who did not. In general, however, she found that women who were over 30 at the birth of their first child were better off economically when they reached age 60 than women who started their families sooner and also childless women.

Relations with other kin

We have seen that older parents who have delayed childbearing are less likely than younger parents to depend on grandparents or other relatives for child care. The reason could be simple distance.

Demographer Larry Long points out that although people tend to move less often as they grow older, the presence of children also inhibits moving.[75] So, of two couples in their thirties, the one that started childbearing early is less likely to have moved than the couple that delayed childbearing. Since it is also likely that the couple which delayed childbearing married at older ages, they probably had met more people from places other than their home town or state from which to choose their mate and thus could be less likely to be living near either set of grandparents or other relatives.

If they are farther away from their relatives, what does this mean for relations between the children and their grandparents? Distance is not the only issue here; the age of the grandparents is an important point. The parents of couples who wait until their mid-thirties to begin childbearing may never get to know their grandchildren as they grow up. They could be 60 and still active when the grandchildren are born, but rarely get to see them because they live far away. Although mortality rates have declined substantially, as time goes on the grandparents may develop ailments which prevent their traveling or force them into nursing homes.

The age difference could cause another difficulty for the couple who delay childbearing: they may have to cope simultaneously with the costs of parents' nursing homes and children's college education. And with two generations of delayed childbearing in a row, couples in the middle are likely to have the double dependency of preschool-aged children and aged parents.

Delayed Childbearing and Society

The delayed childbearers of today were the baby boom babies of the 1950s and early 1960s. All their lives, their sheer numbers have made them a powerful influence on American society. Twenty and thirty years ago they needed schools, so the nation embarked on a massive school-building program. Record companies thrived and college campuses were in turmoil as they reached late adolescence in the late 1960s and early 1970s. Women of this generation have entered the labor force in record numbers and, in a sharp break with the past, are continuing to work through their childbearing years.[76]

Affluent, older, first-time parents are a prime new business market.

Now newspaper and magazine articles talk of the "baby boomlet" as many of the baby boomers who put off childbearing start to have children. Because so many of these women are employed, they have triggered a move away from maternity clothes that emphasize pants and blousy tops to "three-piece gray flannel suits" suitable for the office. Levi Strauss and Co. recently introduced "snap-to-fit maternity jeans," which may reflect the popularity of jeans or mean that pregnant women are making their wishes known about what they want to buy and wear. Two factors may explain entrepreneurs' renewed interest in pregnant women: the trend to consumerism and the increased proportion of first births. The latter is important because the greatest expenses—whether for maternity clothes or baby equipment—come with the first pregnancy. It is also possible that with the wide acceptance of small families, usually one or two children, there is more time, willingness, and financial ability to purchase special things for the baby, such as infant swimming lessons, postnatal mother-baby exercise classes, elaborate educational toys, and color-coordinated nursery equipment.

Women who delay childbearing generally have more money to spend on their children than women who start earlier. Little wonder that new businesses catering to these older, affluent, first-time, working mothers are proliferating. What will happen to them when the baby bust generation replaces the baby boomers in the childbearing ages? Some may fade away; others will diversify. But many could survive because working women, no matter at what ages they have their children, will want maternity clothes suitable for work and will still enjoy spending money on themselves and their infants.

The baby boom women's passage through the childbearing ages is also affecting the health industry. With so many of them delaying first births to older ages, the potential increase in Down syndrome and other chromosomal birth defects is great. One group of researchers projects a 64 percent increase in the number of American children born with serious chromosomal birth defects between 1978 and the year 2000.[77] That could be expensive for society. The researchers estimate that future costs of custodial care only for children born in 1978 with serious birth defects could run more than two billion dollars. Such calculations, of course, do not include the emotional costs to families and friends.

Health planners are becoming concerned with meeting the inevitably increased demand for the prenatal diagnostic techniques that can now detect many of these serious birth defects. Priorities may shift from pregnant teenagers, whose numbers are declining as the smaller cohorts of the late 1960s and 1970s pass through the teenage years, to the special health needs of older mothers and their infants. Researchers are developing new prenatal diagnostic tests like chorionic villi sampling. The medical profession is becoming aware that the older, first-time mother does not automatically have problems, but requires good pre- and postnatal care and careful use of modern techniques during her pregnancy.

Table 8. Projected Mean Age at First Birth and Percent Who Will Be Childless of Women Born in 1950: U.S. and Five European Countries

Country	Mean age at first birth	Percent childless
Austria	23.1	34
Belgium	25.2	4
England and Wales	24.9	21
Italy	26.0	10
West Germany	24.2	19
United States	22.9	19

Source: David E. Bloom, "Age Patterns of Women at First Birth," *Genus*, Vol. 38, No. 3/4 (1982) Table 5, pp. 122-123, and "What's Happening to the Age at First Birth in the United States? A Study of Recent Cohorts," *Demography*, Vol. 19, No. 3 (1982) Table 2, p. 360.

International Comparisons

If American women's current tendency to postpone childbearing, though a sharp contrast to the baby boom era, is not unlike the behavior of their forebears earlier in this century, how does it compare with current trends in other developed countries? Data to make such a comparison are not easy to obtain because each country has its own methods of measuring, tabulating, and publishing demographic data. However, for several West European countries and the U.S., David Bloom has projected the percentage of women born in the late 1940s and early 1950s who are likely to be childless at the end of their reproductive years and the mean age at first birth for those women who do have children. His projections for women born in 1950 are shown in Table 8.

Despite the U.S. trend toward delayed childbearing, the mean age at first birth for women born in 1950 is likely to be lower in the U.S. (22.9) than it will be in all five of the European countries shown. Further, the level of childlessness projected for this cohort of American women (19 percent) is not unusual; Bloom projects that 34 percent of their counterparts in Austria will never bear children. Of the West European countries he studied, Bloom found that only Belgium, Finland, Portugal, and West Germany had any tendency toward increasing ages at first birth among recent cohorts of women. In all these countries, however, the mean age at first birth for cohorts born up to the early 1950s is already higher than it is for the same cohorts in the U.S. The 1955 U.S. cohort, which has been delaying first births much more than American women born in 1950, is in fact still projected to have a mean age at first birth that is lower (23.08) than that for the 1950 cohorts in any of the five European countries shown in Table 8.

The Future

Will a large proportion of American women continue to defer childbearing to their late twenties and thirties? The answer depends on what is causing the current delay. If the forces that are causing it continue, then delayed childbearing will continue. We have seen that delayed childbearing is closely related to delayed marriage and increasing levels of childlessness among women 25 to 34. All three are different manifestations of the same thing—call it the propensity to reproduce. If one subscribes to Easterlin's cyclic theory, then one might expect the proportion of women who delay childbearing to decline as the baby bust generation of the 1970s enters the labor force and economic opportunities improve for young men. On the other hand, if Easterlin's critics are correct in arguing that increased opportunities in the work place have made it too costly for women to stay home to raise children, we might see an even greater increase in the proportion of women who postpone children or forego them entirely.

We do not need a crystal ball, however, to forecast that numbers and rates of first births to women aged 25-34 will continue to be relatively high for the next decade. Even with no change in the tendency of women of these ages to bear children, the rates and numbers will remain high as the large baby boom cohort moves through these ages. Women born in what demographers label the last year of the baby boom, 1964, have just turned 20. Thus baby boom women will continue to be the major influence on U.S. fertility through the 1990s. And most of them show no signs of reverting to early-childbearing patterns. □

References

1. Thornton, Arland and Deborah Freedman, "The Changing American Family," *Population Bulletin,* Vol. 38, No. 4 (October 1983).
2. *Ibid.*, p. 8; Samuel H. Preston and John McDonald, "The Incidence of Divorce Within Cohorts of American Marriages Contracted Since the Civil War," *Demography,* Vol. 16, No. 1 (February 1979) pp. 1-25; Arland Thornton and Willard L. Rodgers, "Changing Patterns of Marriage and Divorce in the United States," Final Report to the National Institute of Child Health and Human Development (NICHD), Contract N01-HD-02850, 1983, pp. 103-104.
3. Smith, Ralph E., "The Movement of Women into the Labor Force," in Ralph E. Smith (ed.), *The Subtle Revolution: Women at Work* (Washington, DC: Urban Institute Press, 1979) pp. 1-29; Norman Ryder, "The Future of American Fertility," *Social Problems,* Vol. 26, No. 3 (1979) pp. 364-368.
4. Furstenberg, Frank F., Jr., Christine Winquist Nord, James L. Peterson, and Nicholas Zill, "The Life Course of Children of Divorce: Marital Disruption and Parental Contact," *American Sociological Review,* Vol. 48, No. 5 (October 1983) p. 664.
5. Fawcett, James T., "The Value and Cost of the First Child," in Warren B. Miller and Lucille F. Newman (eds.), *The First Child and Family Formation* (Chapel Hill, NC: Carolina Population Center, 1978) p. 245; Thomas J. Espenshade, *Investing in Children: New Estimates of Parental Expenditures* (Washington, DC: Urban Institute Press, 1984) p. 30; Ronald R. Rindfuss, S. Philip Morgan, and C. Gray Swicegood, "The Transition to Motherhood: The Intersection of Structural and Temporal Dimensions," *American Sociological Review,* Vol. 49, No. 3 (June 1984) p. 359; Alice S. Rossi, "Transition to Parenthood," *Journal of Marriage and the Family,* Vol. 30, No. 1 (February 1968) pp. 26-39.
6. Rogers, Carolyn C. and Martin O'Connell, "Fertility of American Women: June 1982," *Current Population Reports,* Series P-20, No. 387 (Washington, DC: Bureau of the Census, 1984) p. 4.
7. Barnes, Roberta and Robert Moffitt, "A Dynamic Model of the Expectations and Fertility of Childless Women," Project report to NICHD, N01-HD-12827, December 1982, p. 97.
8. Bloom, David E., "What's Happening to the Age at First Birth in the United States? A Study of Recent Cohorts," *Demography,* Vol. 19, No. 3 (August 1982) Table 2, p. 360.
9. Bloom, David E. and Anne R. Pebley, "Voluntary Childlessness: A Review of the Evidence and Implications," *Population Research and Policy Review,* Vol. 1 (1982) p. 214; Jean E. Veevers, "Voluntary Childlessness: A Review of the Issues and Evidence," *Marriage and Family Review,* Vol. 2, No. 2 (1979) pp. 1-25.
10. Rindfuss, Morgan, and Swicegood, "Transition to Motherhood," p. 368; Ronald R. Rindfuss and James A. Sweet, "The Pervasiveness of Postwar Fertility Trends in the United States," in Karl E. Taeuber, Larry L. Bumpass, and James A. Sweet (eds.), *Social Demography* (New York: Academic Press, 1978) pp. 15-41.
11. Thornton and Freedman, "Changing American Family," p. 12; Maurice J. Moore and Martin O'Connell, "Perspectives on American Fertility," *Current Population Reports,* Series P-23, No. 70 (Washington, DC: Bureau of the Census, 1978) p. 1.
12. Heuser, Robert L., *Fertility Tables for Birth Cohorts by Color: United States, 1917-1973* (Rockville, MD: NCHS, 1976) Table 6A.
13. Quoted in Ann Mariano, "50's Baby Boom Losing Ground in Economic Race," *The Washington Post,* September 8, 1984, p. E1.
14. *Ibid.*
15. Cherlin, Andrew J., *Marriage, Divorce, Remarriage* (Cambridge, MA: Harvard University Press, 1981) p. 46; Anne R. Pebley, "Changing Attitudes Toward the Timing of First Births," *Family Planning Perspectivos,* Vol. 13, No. 4 (July/August 1981) pp. 171-175; Arland Thornton and Deborah Freedman, "Changing Attitudes Toward Marriage and Single Life," *Family Planning Perspectives,* Vol. 14, No. 6 (November/December 1982) pp. 297-303; Jane Riblett Wilkie, "The Trend Toward Delayed Parenthood," *Journal of Marriage and the Family,* Vol. 43, No. 3 (August 1981) pp. 583-591.
16. Pratt, William F., William D. Mosher, Christine A. Bachrach, and Marjorie C. Horn, "Understanding U.S. Fertility: Findings from the National Survey of Family Growth," *Population Bulletin,* Vol. 39, No. 5, forthcoming December 1984.
17. McFalls, Joseph A., Jr., "Frustrated Fertility: A Population Paradox," *Population Bulletin,* Vol. 34, No. 2 (May 1979).

18. Morgan, S. Philip, C. Gray Swicegood, and Ronald R. Rindfuss, "The Initiation of Childbearing Among Whites and Blacks: Divergent Trends in the 1970s," July 1984, unpublished manuscript, p. 17.
19. Sweet, James A., "Changes in the Allocation of Time of Young Women Among Schooling, Marriage, Work and Childrearing: 1960-1976," paper presented at the Population Association of America annual meeting, Philadelphia, PA, April 26-28, 1979.
20. Hajnal, John, "European Marriage Patterns in Perspective," in David V. Glass and D. E. C. Eversley (eds.), *Population in History* (London: Arnold, 1965) pp. 101-143; Ansley J. Coale, "The Decline of Fertility in Europe from the French Revolution to World War II," in S. J. Behrman, Leslie Corsa, Jr., and Ronald Freedman (eds.), *Fertility and Family Planning: A World View* (Ann Arbor, MI: University of Michigan Press, 1969) pp. 3-24; Michael W. Flinn, *The European Demographic System, 1500-1820* (Baltimore: Johns Hopkins University Press, 1981); John Modell, Frank F. Furstenberg, Jr., and Theodore Hershberg, *Social Change and Transitions to Adulthood in Historical Perspective,* 2nd ed. (New York: St. Martin's Press, 1978) p. 199.
21. Bureau of Labor Statistics, *Women at Work: A Chartbook,* Bulletin 2168 (Washington, DC: April 1983) pp. 12-13.
22. Nathanson, Constance and Marshall Becker, "Aspirations, Opportunity Structures and Reproductive Roles as Determinants of Contraceptive Behavior Among Adolescent Girls," paper presented at the Population Association of America annual meeting, Pittsburgh, PA, May 1983; Kristin A. Moore and Martha R. Burt, *Private Crisis, Public Cost* (Washington, DC: The Urban Institute Press, 1982).
23. Rogers, Carolyn C. and Martin O'Connell, "Childspacing Among Birth Cohorts of American Women: 1905 to 1959," *Current Population Reports,* Series P-20, No. 385 (Washington, DC: Bureau of the Census, February 1984) Tables 3A, 4, and 10.
24. Cited in Sandra G. Boodman, "Space in Day-Care Centers Is at a Premium," *The Washington Post,* August 27, 1984, p. A21.
25. Presser, Harriet B. and Virginia S. Cain, "Shift Work Among Dual-Earner Couples with Children," *Science,* Vol. 218, February 18, 1983, p. 878.
26. Card, Emily, "Tax Breaks for Child Care," *Ms.,* March 1984, pp. 16, 19-20.
27. Boodman, "Space in Day-Care Centers at a Premium."
28. *Ibid.*
29. Bloom, David E. and James Trussell, "What Are the Determinants of Delayed Childbearing and Permanent Childlessness in the United States?," *Demography,* forthcoming November 1984; Wilkie, "Trend Toward Delayed Parenthood," p. 587; Ronald R. Rindfuss, Larry Bumpass, and Craig St. John, "Education and Fertility: Implications for the Roles Women Occupy," *American Sociological Review,* Vol. 45, No. 3 (June 1980) pp. 431-447.
30. Department of Education, National Center for Education Statistics, Earned Degrees Survey, unpublished data.
31. Bureau of the Census, *Statistical Abstract of the United States 1983,* 104th ed. (Washington, DC: 1983) p. 170.
32. Carter, Hugh and Paul C. Glick, *Marriage and Divorce: A Social and Economic Study* (Cambridge, MA: Harvard University Press, 1976) p. 81; Paul C. Glick, David M. Heer, and John C. Beresford, "Family Formation and Family Composition: Trends and Prospects," in Marvin B. Sussman (ed.), *Sourcebook in Marriage and the Family* (New York: Houghton-Mifflin, 1963) pp. 30-40.
33. Schoen, Robert, "Measuring the Tightness of a Marriage Squeeze," *Demography,* Vol. 20, No. 1 (February 1983) pp. 61-78.
34. See, e.g., Richard A. Easterlin, *Birth and Fortune: The Impact of Numbers on Personal Welfare* (New York: Basic Books, 1980).
35. Westoff, Charles F., "Some Speculations on the Future of Marriage and Fertility," *Family Planning Perspectives,* Vol. 10, No. 2 (March/April 1978) pp. 79-83, and "Marriage and Fertility in the Developed Countries," *Scientific American,* Vol. 239, No. 6 (December 1978) pp. 51-57; William P. Butz and Michael P. Ward, "The Emergence of Countercyclical U.S. Fertility," *American Economic Review,* Vol. 69 (1979) pp. 381-328; Ryder, "Future of American Fertility."
36. Federation CECOS, D. Schwartz, and M. J. Mayaux, "Female Fecundity as a Function of Age," *The New England Journal of Medicine,* Vol. 306, No. 7 (February 18, 1982) pp. 404-406.

37. Bongaarts, John, "Infertility After Age 30: A False Alarm," *Family Planning Perspectives,* Vol. 14, No. 2 (March/April 1982) pp 75-78.
38. Hendershot, Gerry E., William D. Mosher, and William F. Pratt, "Infertility and Age: An Unresolved Issue," *Family Planning Perspectives,* Vol. 14, No. 5 (September/October 1982) pp. 287-289.
39. Menken, Jane and Ulla Larsen, "Age and Fecundity: How Late Can You Wait?", Princeton University, 1984, paper submitted for publication.
40. Daniels, Pamela and Kathy K. Weingarten, "A New Look at the Medical Risks in Late Childbearing," *Women and Health,* Vol. 4, No. 1 (1979) pp. 17-18; Albert B. Kapstrom, "Does the Career Woman Face Infertility?", *Supervisor Nurse,* Vol. 12, No. 7 (1981) p. 54.
41. American College of Obstetricians and Gynecology, *Standards for Obstetric-Gynecologic Services,* 5th ed. (Washington, DC: 1982) p. 11.
42. Forman, Michelle R., Olav Mierik, and Heinz B. Berendes, "Delayed Childbearing in Sweden," forthcoming in *JAMA.*
43. Nortman, Dorothy, "Parental Age as a Factor in Pregnancy Outcome and Child Development," *Reports on Population/Family Planning,* No. 16 (New York: The Population Council, August 1974) p. 22.
44. Kessler, I., M. Lancet, R. Borenstein, and A. Steinmutz, "The Problem of the Older Primipara," *Obstetrics and Gynecology,* Vol. 56, No. 2 (August 1980) pp. 165-169.
45. Daniels and Weingarten, "Medical Risks in Late Childbearing," p. 26.
46. National Institutes of Health (NIH), *Antenatal Diagnosis,* Report of a Consensus Development Conference sponsored by the NICHD and assisted by the Office for Medical Applications of Research and the Fogarty International Center, March 5-7, 1979 (Bethesda, MD: 1979) p. 1-1.
47. Goldberg, Marshall F., Larry D. Edmonds, and Godfrey P. Oakley, "Reducing Birth Defect Risk in Advanced Maternal Age," *JAMA,* Vol. 242, No. 21 (1979) pp. 2292-2294.
48. NIH, *Antenatal Diagnosis,* pp. 1-6, 1-7.
49. Mittenthal, Sue, "Amniocentesis On the Increase," *The New York Times,* August 22, 1984, p. C1.
50. NIH, *Antenatal Diagnosis,* p. 1-33.
51. Barr, Marie A., Deanna Linn, Anita Blocklinger, Ronald J. Wapner, and Laird Jackson, "First Trimester Fetal Genetic Diagnosis," information statement, Jefferson Medical College, Thomas Jefferson University, Philadelphia, PA, July 23, 1984; Clinical Genetic Services, "Questions and Answers About Chorionic Villi Sampling at Northwestern Memorial Hospital," Northwestern Memorial Hospital, Chicago, IL, August 21, 1984.
52. Anderson, Barbara A., "Male Age and Fertility: Results from Ireland Prior to 1911," *Population Index,* Vol. 41, No. 4 (1975) pp. 561-567.
53. Schwartz, Daniel et al., "Semen Characteristics as a Function of Age in 833 Fertile Men," *Fertility and Sterility,* Vol. 39, No. 4 (April 1983) pp. 530-535.
54. "The Saddest Epidemic," in "The New Origins of Life," cover story, *Time,* September 10, 1984, p. 50.
55. Nortman, "Parental Age as a Factor in Pregnancy Outcome," p. 22.
56. *Ibid.,* p. 41; Daniels and Weingarten, "Medical Risks in Late Childbearing," pp. 30-31.
57. *Ibid.,* p. 31.
58. *Ibid.,* pp. 31-32.
59. *Ibid.,* p. 17; William D. Mosher, "Fecundity and Infertility in the United States, 1965-1982," paper presented at the Population Association of American annual meeting, Minneapolis, MN, May 3-5, 1984.
60. Daniels and Weingarten, "Medical Risks in Late Childbearing," p. 17.
61. Otten, Alan L., "Fertility Rights: Medical Efforts to Help Childless Couples Pose Host of Difficult Issues," *The Wall Street Journal,* Eastern edition, August 7, 1984, p. 1.
62. "The New Origins of Life," and "A Legal, Moral, Social Nightmare," *Time,* September 10, 1984, pp. 46, 54.
63. *Ibid.*
64. "New Origins of Life," p. 52.
65. Department of State, Visa Office, personal communication, September 1984.
66. Thornton and Freedman, "Changing American Family," Figure 2, p. 7.
67. Sweet, James A., "Differentials in Marital Disruption," Working Paper 73-28, Center for

Demography and Ecology, The University of Wisconsin-Madison, October 1973, pp. 13, 16, 17, and 19; Carter and Glick, *Marriage and Divorce*, p. 234; Cherlin, *Marriage, Divorce, Remarriage*, p. 18.
68. Dreyer, Albert S. and Kristine M. Baber, "Costs and Benefits of Delayed Childbearing," University of Connecticut, paper presented at the Eastern Psychological Association meeting, Baltimore, MD, April 1984.
69. Hellman, Louis M. and Jack A. Pritchard, *Williams Obstetrics*, 14th ed. (New York: Appleton Century Crofts, 1971) p. 658.
70. Lake, Alice, *Woman's Day*, March 6, 1984, p. 62.
71. Espenshade, *Investing in Children*, p. 61.
72. Rossi, Alice S., "Aging and Parenthood in the Middle Years," in Paul B. Baltes and Orville G. Brim, Jr. (eds.), *Life-Span Development and Behavior*, Vol. 3 (New York: Academic Press, 1980) pp. 193-194.
73. Espenshade, *Investing in Children*, p. 61.
74. Hofferth, Sandra L., "Long-term Economic Consequences for Women of Delayed Childbearing and Reduced Family Size," *Demography*, Vol. 21, No. 2 (1984) pp. 141-155.
75. Long, Larry, "The Influence of Number and Ages of Children on Residential Mobility," *Demography*, Vol. 9, No. 3 (August 1972) pp. 371-382.
76. Waite, Linda J., "U.S. Women at Work," *Population Bulletin*, Vol. 36, No. 2 (April 1981) p. 9.
77. Selle, Henry F., Deborah W. Holmes, and Mary Lee Ingbar, "The Growing Demand for Midtrimester Amniocentesis: A Systems Approach to Forecasting the Need for Facilities," *American Journal of Public Health*, Vol. 69, No. 6 (1979) pp. 574-580.

Selected Bibliography

The authors of this *Bulletin* suggest the following for those interested in reading more about the current trend toward delayed childbearing in the U.S.

Bloom, David E., "Delayed Childbearing in the United States," *Population Research and Policy Review*, Vol. 3 (1984) pp. 103-139.

______, "Age Patterns of Women at First Birth," *Genus*, Vol. 38, No. 3-4 (1982) pp. 101-128.

______, "What's Happening to the Age at First Birth in the United States? A Study of Recent Cohorts," *Demography*, Vol. 19, No. 3 (1982) pp. 351-370.

______ and James Trussell, "What Are the Determinants of Delayed Childbearing and Permanent Childlessness in the United States?", *Demography*, forthcoming November 1984.

______ and Anne R. Pebley, "Voluntary Childlessness: A Review of the Evidence and Implications," *Population Research and Policy Review*, Vol. 1 (1982).

Boodman, Sandra G., "The New Baby Boom: Working Women Want Job and Family," and accompanying articles, *The Washington Post*, August 27, 1984, pp. A1, A20-21.

Daniels, Pamela and Kathy Weingarten, *Sooner or Later: The Timing of Parenthood in Adult Lives* (New York: Norton, 1982).

______, "A New Look at the Medical Risks in Late Childbearing," *Women and Health*, Vol. 4, No. 1 (1979) pp. 5-36.

Hofferth, Sandra L., "Long-Term Economic Consequences for Women of Delayed Childbearing and Reduced Family Size," *Demography,* Vol. 21, No. 2 (1984) pp. 141-155.

Kapstrom, Albert B., "Does the Career Woman Face Infertility?", *Supervisor Nurse,* Vol. 12, No. 7 (July 1981) pp. 54-60.

Menken, Jane and Ulla Larsen, "Age and Fecundity: How Late Can You Wait?," Princeton University, 1984, paper submitted for publication.

Morgan, S. Philip, C. Gray Swicegood, and Ronald R. Rindfuss, "The Initiation of Childbearing Among Whites and Blacks: Divergent Trends in the 1970's," paper presented at the American Sociological Association annual meeting, San Antonio, TX, September 1984.

Morgan, S. Philip and Ronald R. Rindfuss, "Delayed Childbearing in the United States: 'Depression'-style Childbearing in the 1970's and 1980's," paper presented at the American Sociological Association annual meeting, San Francisco, CA, September 1982.

Nortman, Dorothy, "Parental Age as a Factor in Pregnancy Outcome and Child Development," *Reports on Population/Family Planning,* No. 16 (New York: The Population Council, August 1974).

Pebley, Anne R., "Changing Attitudes Toward the Timing of First Births," *Family Planning Perspectives,* Vol. 13, No. 4 (July/August 1981) pp. 171-175.

Rindfuss, Ronald R., Larry Bumpass, and Craig St. John, "Education and Fertility: Implications for the Roles Women Occupy," *American Sociological Review,* Vol. 45, No. 3 (June 1980) pp. 431-447.

Rossi, Alice S., "Aging and Parenthood in the Middle Years," in Paul B. Baltes and Orville G. Brim, Jr. (eds), *Life-Span Development and Behavior,* Vol. 3 (New York: Academic Press, 1980) pp. 137-205.

Thornton, Arland and Deborah Freedman, "The Changing American Family," *Population Bulletin,* Vol. 38, No. 4 (October 1983).

______, "Changing Attitudes Toward Marriage and Single Life," *Family Planning Perspectives,* Vol. 14, No. 6 (November/December 1982) pp. 297-303.

Veevers, Jean E., "Voluntary Childlessness: A Review of Issues and Evidence," *Marriage and Family Review,* Vol. 2, No. 2 (1979) pp. 2-26.

Vaslow, M., B. Rabinowich, and J. Suwalsky, "The Impact on the Child of Maternal Employment," in E. S. Goland (ed.), *Developmental Plasticities: Social Context and Human Development* (Hillside, NJ: Erlbaum, forthcoming).

Wilkie, Jane Riblett, "The Trend Toward Delayed Parenthood," *Journal of Marriage and the Family,* Vol. 43, No. 3 (August 1981) pp. 583-591.

Recent Population Bulletins and Bulletin Slides

Population Bulletin prices, *prepaid*, are:

Single Copy—$4.00

Bulk copies:

2-10	$3.00 each
11-50	$2.50 each
51 or more	$2.00 each

Sets of 35 mm colored slides for figures and tables appearing in each *Bulletin* are available at the **additional** prices shown in parentheses.

Note: *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of Bulletins and slides ordered to cover postage and handling.

Volume 36 (1981-82)

No. 1 *Cuba: The Demography of Revolution,* by Sergio Diaz-Briquets and Lisandro Perez (14 slides, including frontispiece map, $7.00)

No. 2 *U.S. Women at Work,* by Linda J. Waite (13 slides, $6.50)

No. 3 *World Food Resources and Population: The Narrowing Margin,* by Lester R. Brown (16 slides, $8.00)

No. 4 *India's Population: Second and Growing,* by Pravin Visaria and Leela Visaria (19 slides, including map, $9.50)

No. 5 *The Changing U.S. Farmland Scene,* by Michael Brewer (12 slides, $6.00)

No. 6 *Eastern Europe: Pronatalist Policies and Private Behavior,* by Henry P. David (16 slides, including map, $8.00)

Volume 37 (1982)

No. 1 *The World Fertility Survey: Charting Global Childbearing,* by Robert Lightbourne Jr. and Susheela Singh, with Cynthia P. Green (21 slides, including map, $10.50)

No. 2 *U.S. Population: Where We Are; Where We're Going,* by Population Reference Bureau staff and guest experts (27 slides, $13.50)

No. 3 *The Soviet Union: Population Trends and Dilemmas,* by Murray Feshbach (22 slides, including map, $11.00)

No. 4 *Black America in the 1980s,* by John Reid (20 slides, $10.00)

Volume 38 (1983)

No. 1 *Third World Family Planning Programs: Measuring the Costs,* by Nancy Yinger, Richard Osborn, David Salkever, and Ismail Sirageldin (13 slides, $6.50)

No. 2 *China: Demographic Billionaire,* by H. Yuan Tien (17 slides, including map, $8.50)

No. 3 *U.S. Hispanics: Changing the Face of America,* by Cary Davis, Carl Haub, and JoAnne Willette (21 slides, including frontispiece map, $10.50)

No. 4 *The Changing American Family,* by Arland Thornton and Deborah Freedman (12 slides, $6.00)

Volume 39 (1984)

No. 1 *Planet Earth 1984-2034: A Demographic Vision,* by Leon F. Bouvier (9 slides, $4.50)

No. 2 *Israel's Population: The Challenge of Pluralism,* by Dov Friedlander and Calvin Goldscheider (15 slides, including map, $7.50)

No. 3 *The Business of Demographics,* by Cheryl Russell

No. 4 *Delayed Childbearing in the U.S.: Facts and Fictions,* by Wendy H. Baldwin and Christine Winquist Nord (17 slides, $8.50)

Send orders with checks to:
Population Reference Bureau, Inc.
Circulation Department
P.O. Box 35012
Washington, D.C. 20013

Population Reference Bureau, Inc.

The PRB gathers, interprets, and disseminates information on the facts and implications of national and world population trends. Founded in 1929, it is a private, nonprofit educational organization that is supported by grants and contracts, individual and corporate contributions, memberships, and sales of publications. It consults with other groups in the United States and abroad, operates information and library services, and issues the publications described on the outside back cover. The PRB also assists the development of population education through formal and nonformal programs.

Officers

*Mildred Marcy, *Chair of the Board*
*Thomas W. Merrick, *President*
*Raymond H. Potvin, *Secretary of the Board*
*Bert T. Edwards, *Treasurer of the Board*

Trustees

Jodie T. Allen
Brent Ashabranner
*Michael P. Bentzen
*John C. Beyer
Norman E. Borlaug
Wallace Bowman
Michael F. Brewer
John H. Bryant
Marriner C. Eccles, Jr.
Melvyn J. Estrin
Joseph L. Fisher
Frederick G. Harmon
Jonathan Hawley
*Robert Jordan
Laura Olson
Martha Phillips
Jonas Edward Salk
Bennetta B. Washington

Robert P. Worrall, *President Emeritus*
Conrad Taeuber, *Chairman Emeritus and Demographic Consultant*

Advisory Committee

Samuel Baum
Calvin L. Beale
Donald J. Bogue
Lester R. Brown
Philander P. Claxton, Jr.
Caroline S. Cochran
Mercedes B. Concepcion
Douglas Ensminger
Philip M. Hauser
Carl A. Huether
Jose Ruben Jara
Sam Keeny
Richard K. Manoff
M. A. Sattar
Benjamin Viel
Sloan R. Wayland

*Members of the Executive Committee of the Board of Trustees

The Population Reference Bureau is a private, nonprofit educational organization, founded in 1929. PRB members regularly receive the most vital, up-to-date population information available from the authorities who write PRB's four annual POPULATION BULLETINS; from the lively coverage of the latest news and trends in the monthly news magazine POPULATION TODAY; and from the annually updated WORLD POPULATION DATA SHEET and UNITED STATES POPULATION DATA SHEET wall charts. Educator and library members also receive the population education newsletter INTERCHANGE, four times during the school year, accompanied twice a year by ready-to-use classroom materials.

PRB also publishes the POPULATION TRENDS AND PUBLIC POLICY series, POPULATION BULLETIN POLICY SUPPLEMENTS, four-page EXECUTIVE SUMMARIES outlining the policy implications of current U.S. population trends, and special publications such as the POPULATION HANDBOOK, the STATE DEMOGRAPHICS FOR MARKETING DATA SHEET, and the PRB OCCASIONAL SERIES: THE CARIBBEAN and THE MIDDLE EAST. Write for a listing and prices of publications in print.

For more information, PRB's Information Resource Center responds to population-related inquiries by mail, telephone, or in-person visit. PRB's Demographic Information Service Center (DISC) offers personalized, in-depth data and analyses for individual clients seeking professional interpretation of population trends.

Members of the Population Reference Bureau support an organization that is dedicated to the objective analysis and reporting of one of the world's most compelling concerns.

Population Reference Bureau, Inc.
2213 M Street N.W.
Wasington, D.C. 20037
(202) 785-4664

R8750-2.29-F

Population Bulletin

Understanding U.S. Fertility:

Findings from the National Survey of Family Growth, Cycle III

By William F. Pratt, William D. Mosher, Christine A. Bachrach, Marjorie C. Horn

A publication of the Population
Reference Bureau, Inc.
Vol. 39, No. 5
December 1984

ISSN 0032-468X

Abstract—This *Bulletin* presents the first overview of findings from Cycle III of the National Survey of Family Growth, the latest of seven such surveys of U.S. fertility since 1955 and the first to cover all women of childbearing age in the conterminous U.S. Interviews between August 1982 and February 1983 with 7,969 women, representative of 54 million women aged 15-44, reveal that sterilization is now the leading contraceptive method in the U.S., used by 33 percent of all contraceptors in 1982 (22 percent, female sterilization; 11 percent, male sterilization), followed by the pill (29 percent), condom (12 percent), diaphragm (8 percent), and IUD (7 percent). Linked to this is the continuing decline in unwanted births since the baby boom peak in 1957, which accounted for nearly half of the drop between 1973 and 1982 in ever-married women's children ever born, from 2.2 to 1.9 per woman. However, births conceived sooner than planned increased slightly among younger married women, probably due to the large drop in pill use since 1973 and increased use of the less effective diaphragm and condom among couples still intending to have more children. Black women are now more likely than white women to use the most effective female methods: female sterilization, pill, and IUD. Only 45 percent of women aged 15-44 in 1982 had used a contraceptive method at first intercourse. Four out of five women married for the first time between 1975 and 1982 had intercourse before marriage. However, premarital sexual activity may be leveling off among white teenagers after a steep rise since the early 1970s and declining moderately among black teenagers. Sixteen percent of first marriages among ever-married women aged 15-44 in 1982 had been dissolved within five years, mostly by divorce or separation. Fifty-nine percent of black women with children in 1982 had their first birth before marriage, compared to 11 percent of white mothers. The proportion of babies who were breastfed more than doubled between 1970-71 and 1980-81, from 24 to 53 percent.

Editor: Jean van der Tak Graphics: George Hager

The *Population Bulletin* is published four times a year and is distributed along with other publications listed on the back cover to members of the Population Reference Bureau. If you would like to order additional copies of this *Bulletin* or join the PRB if you are not already a member, write the Circulation Department, Population Reference Bureau, Inc., 2213 M Street N.W., Washington, DC 20037; Telephone: (202) 785-4664. Prices for the *Population Bulletin* are: $4.00 per single copy; bulk copies; 2-10, $3.00 each; 11-50, $2.50 each; 51 or more, $2.00 each. *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of *Bulletins* ordered to cover postage and handling. Annual rates for Population Reference Bureau membership *inside the United States* are: individuals, $30; educators, $20; associate educator members, $10; students, $10; libraries, $40; corporations and institutions, $200. *For all other countries,* the rates are: individuals, $37.50; educators, $25; associate educator members, $12.50; students, $12.50; libraries, $50; corporations and institutions, $250.

For information on other recent *Population Bulletins* and *Bulletin Slides,* see page 43.

The suggested citation, if you quote from this publication, is: William F. Pratt, et al., "Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III," *Population Bulletin,* Vol. 39, No. 5 (Population Reference Bureau, Inc.: Washington, DC, 1984). The figures and tables from this *Population Bulletin* may be freely reproduced, provided credit is given to the Population Reference Bureau and a copy of the publication in which they appear is forwarded to the PRB.

The *Population Bulletin* is indexed in *GEO Abstracts, PAIS Bulletin, Population Index, Social Sciences Index,* and *Social Sciences Citation Index.* It is included in the coverage of *Current Contents/Social and Behavioral Sciences,* Biosciences Information Service of Biological Abstracts and the CICRED/UNFPA *Review of Population Reviews,* and is available on microfilm from University Microfilms International, 300 North Zeeb, Ann Arbor, MI 48106. Selected *Bulletins* are also included in the coverage of and available in microfiche through ERIC Systems.

Understanding U.S. Fertility:

Findings from the National Survey of Family Growth, Cycle III

By William F. Pratt, William D. Mosher, Christine A. Bachrach, and Marjorie C. Horn

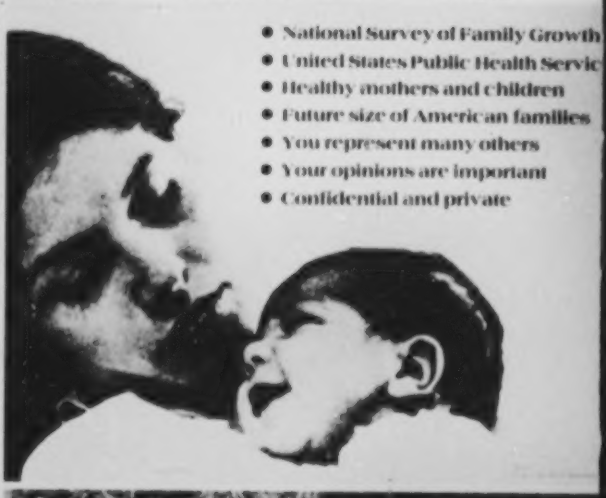
Page
Introduction ... 3
The Background ... 4
Conceptual Framework ... 6
Childbearing and Wantedness of Births ... 8
Exposure to Sexual Intercourse ... 11
  Proportions who ever had intercourse ... 11
  Marital status ... 13
  Timing of marital events ... 16
Likelihood of Conception ... 17
  Contraceptive use ... 17
  Current contraceptive use, 1982 ... 20
  Trends among married couples ... 22
  Family planning services ... 24
  Infertility ... 27
  Breastfeeding ... 28
Live Birth and Other Pregnancy Outcomes ... 30
  Unwanted and mistimed births ... 31
  Timing of first birth ... 33
Summary and Conclusions ... 35
Appendix: Survey design; Reliability of estimates ... 36
References ... 38
Selected Bibliography: NSFG ... 41

Figures
(This *Bulletin* contains 19 figures which illustrate data presented in the tables.)

Tables

1. Children Ever Born, Wanted, and Expected by Ever-Married Women Aged 15-44: 1973 and 1982 ... 8
2. All Women and Never-Married Women Who Have Ever Had Sexual Intercourse, by Age and Race: 1982 ... 12
3. Marital Status of Women Aged 15-44: 1982 ... 14
4. Marital Dissolution Among Ever-Married Women Aged 15-44 in 1982 ... 16
5. Contraceptive Method Effectiveness ... 18
6. Contraception at First Intercourse of Women Aged 15-44 in 1982 ... 19
7. Current Contraceptive Use: 1982 ... 20
8. Contraceptive Use of Married Women, by Intent to Have More Children: 1965, 1973, 1982 ... 22
9. Use of Family Planning Services: 1982 ... 24
10. Contraceptors Who First Obtained Current Method at a Clinic: 1982 ... 26
11. Infertility Among Married Couples: 1965, 1976, 1982 ... 28
12. Breastfeeding: 1970-1981 ... 29
13. Pregnancy Outcomes in the Five Years Before Interview: 1982 ... 30
14. Unwanted and Mistimed Births: 1965, 1973, 1982 ... 31
15. Timing of First Birth in Relation to Marriage: 1982 ... 34

POPULATION BULLETIN
Vol. 39, No. 5, December 1984



- National Survey of Family Growth
- United States Public Health Servic
- Healthy mothers and children
- Future size of American families
- You represent many others
- Your opinions are important
- Confidential and private

Understanding U.S. Fertility:

Findings from the National Survey of Family Growth, Cycle III

By **William F. Pratt, William D. Mosher, Christine A. Bachrach,** and **Marjorie C. Horn**
National Survey of Family Growth
National Center for Health Statistics
U.S. Department of Health and Human Services

William Pratt has been Chief of the Family Growth Survey Branch, in charge of the National Survey of Family Growth (NSFG), since its inception in 1971. He received his Ph.D. in sociology from the University of Michigan in 1965.

William Mosher received his M.A. in demography from Georgetown University in 1975 and his Ph.D. from Brown University in 1978. He has been on the NSFG staff since July 1978.

Christine Bachrach received her M.A. in demography from Georgetown University in 1974 and her Ph.D. from Johns Hopkins University in 1979. She has been on the NSFG staff since October 1979.

Marjorie Horn received her M.A. in demography in 1980 and is currently a Ph.D. candidate at the University of Pennsylvania. She joined the NSFG staff in November 1983.

The authors gratefully acknowledge the programing assistance of Joseph Farrell, David Johnson, and Virginia Brainard in the preparation of this Bulletin *and the helpful comments of Robert Heuser, Stephanie Ventura, Barbara Wilson, and Gerry Hendershot.*

This *Population Bulletin* presents the first overview of main findings from Cycle III of the National Survey of Family Growth (NSFG), based on interviews between August 1982 and February 1983 with almost 8,000 American women of childbearing age. Conducted by the National Center for Health Statistics, first in 1973 and again in 1976, the NSFG continues the series of seven national surveys begun in 1955 which have gathered information on U.S. fertility more detailed and complete than obtainable from any other source. In Cycle III of the NSFG, for the first time, the sample interviewed was representative of all women aged 15-44 in the U.S. (excluding Alaska, Hawaii, and women in institutions), regardless of whether or not they had been married or had children—a total of 54 million women in 1982. This yields a more complete and accurate picture of American women's fertility-related behavior than ever before to guide businesses, policymakers, health program planners, demographers, marriage, teenager, and family counselors, and ali concerned with American women, their fertility, their babies, and the outlook for the future.

The picture of American women's fertility presented here is also more timely than ever before. Publication of the main results from NSFG's Cycle III in this *Population Bulletin* permits a much shorter time from completion of the survey field work to release of the summary findings than was possible with any of the six earlier U.S. fertility surveys. Highlights of these findings are:

- Reflecting the continuing decline in overall fertility and in unwanted births since the baby boom peak in 1957, the average number of children already born to ever-married women aged 15-44 dropped from 2.2 to 1.9 per woman between 1973 and 1982 and the proportion of these births that were wanted at conception increased from 85 to 89 percent. The average total births ever-married women expected to have by the end of their childbearing dropped from 2.8 to 2.5 per woman.

- Proportions of never-married women aged 15-19 in 1982 who had had sexual intercourse—40 percent among whites and 58 percent among blacks—indicate that premarital sexual activity is leveling off among white teenagers after a steep rise since the early 1970s and declining moderately among black teenagers.
- Nearly one-third of first marriages among ever-married women aged 15-44 in 1982 had been dissolved by divorce, separation, or death—16 percent within five years of the marriage.
- Four out of five women married for the first time between 1975 and 1982 had had intercourse before marriage.
- Only 45 percent of women aged 15-44 in 1982 had used a contraceptive method at first intercourse.
- Fifty-five percent of all women aged 15-44 were using contraception in 1982: 68 percent of currently married women, 35 percent of the never-married, and 24 percent of women aged 15-19.
- Sterilization is now the leading contraceptive method in the U.S., used by 33 percent of all contraceptors in 1982 (22 percent, female sterilization; 11 percent, male sterilization), followed by the pill (29 percent), condom (12 percent), diaphragm (8 percent), and IUD (7 percent).
- Among married contraceptors, pill use dropped from 36 percent in 1973 to 20 percent in 1982; female sterilization rose from 12 to 26 percent.
- Seventy-eight percent of black contraceptors in 1982 were using the most effective methods (pill, IUD, male or female sterilization), compared to 67 percent of white contraceptors.
- The percentage of married women aged 20-24 who were infertile (unable to conceive after a year of intercourse without contraception) rose from 4 to 11 percent between 1965 and 1982.
- Twenty-four percent of American babies born in the early 1970s were breastfed. By the early 1980s, the proportion had more than doubled to 53 percent (57 percent among whites, 25 percent among blacks, 73 percent among infants born to college-educated women).
- Between 1965 and 1973, the proportion of married women's births in the preceding five years that were unplanned dropped from 65 to 37 percent, probably because of the increased use of the pill and IUD during this period, but declined only to 29 percent by 1982.
- In 1982, 59 percent of black mothers reported having had their first birth before marriage, compared to 11 percent of white mothers.

The Background

Beginning around 1800, fertility in the U.S. dropped steadily from about seven children per women to a little over two children per woman during the depression of the 1930s,[1] and most observers at that time expected it to inch still lower. After World War II, demographers were prepared for a brief postwar spurt in fertility, but not the protracted surge that followed. The total fertility rate, which had been 2.3 births per woman in 1940, was up to 3.1 in 1950 and kept on climbing to 3.7 in 1957.[2] Part of this rise was accounted for by older women making up for births deferred during the depression and the war, but some represented a shift upward in average family size. Data from the decennial census and the birth registration system could not explain why fertility had stayed so high for so long. Writing in 1959, the authors of the 1955 Growth of American Families (GAF) survey observed:

> "The United States is one of the few countries in which a high postwar birth rate has continued to the present. The extent and duration of the 'baby boom' was unanticipated by most population experts. It has led to a search for new concepts and new methods to use in measuring and analyzing our fertility and

population trends. The [1955 GAF survey] . . . is, in part, an attempt to understand the upsurge in the birth rate and to chart its future course by means of data of a type not previously available."[3]

The GAF surveys were conducted by university researchers under private auspices in 1955 and 1960.[4] These were the first nationally representative surveys in the U.S. to collect information on fertility, family planning, and related aspects of maternal and child health. They proved so useful that the U.S. Department of Health, Education and Welfare funded similar, university-based surveys—the National Fertility Study—in 1965 and 1970.[5] These two surveys documented factors associated with the large decline in fertility during the 1960s and the difference between racial, religious, and other groups. Then came the three NSFG surveys of 1973, 1976, and 1982, conducted by the National Center for Health Statistics (part of the U.S. Department of Health and Human Services). In reporting results from the latest of these surveys, this *Bulletin* often describes trends with a look back at data collected in 1973 and 1965.

This series of seven national surveys in 27 years has traced important trends that cannot be measured from other sources of data: the rise of the pill, IUD, and sterilization as contraceptive methods and the decline in the overall birth rate and in unwanted fertility since the late 1950s. The surveys have shown the great importance of race and religious affiliation as correlates of fertility and contraceptive practice and have allowed researchers to measure levels of unwanted and unplanned fertility in the population, the effectiveness of contraceptive methods, and levels and trends in other factors that affect fertility, such as infertility, breastfeeding, miscarriages, and stillbirths. Results from the 1973 and 1976 NSFG surveys have been released in many previous publications.[6] Monographs summarizing findings from the four earlier surveys are listed at the end of the Selected Bibliography (see page 42).

The first survey, in 1955, was based on interviews with currently married white women aged 18-39. By 1973 and 1976, formerly married women and single mothers were also interviewed and black women were sampled at higher rates so that separate statistics for them would be reliable. Since then it has become clear that interviewing only women who have been married or had children is now inadequate for a full picture of U.S. fertility. Two reasons for this are the substantial rise in premarital intercourse among teenagers during the 1970s[7] and the steady increase in births to unmarried women since at least 1940.[8] Information on *all* women aged 15-44 is necessary to identify the number of women "at risk" of pregnancy—those who have ever had or are currently having sexual intercourse, and who are not sterile. These data permit researchers to estimate the population in need of contraception and of family planning, infertility, and other reproductive health services, and to describe the "intermediate variables" affecting fertility more completely and accurately than ever before.

The 1982 NSFG, covering all women aged 15-44 in the conterminous U.S., was designed to answer these data needs. Between August 1982 and February 1983, 7,969 women aged 15-44 were interviewed in their own homes by professional female interviewers. This included 4,577 white, 3,201 black, and 191 women of other races, of whom 1,888 were teenagers (women aged 15-19), and 3,551 were currently married, 3,318 were never married, and 1,100 were widowed, divorced, or separated from their husbands. Teenage women and black women were sampled at higher rates than others. The box on the next page describes how these sample numbers and the findings were translated into the national estimates and percentages shown in the tables of this *Bulletin*. More information on the survey design is given in the Appendix (page 36) and other publications.[9]

Translating 1982 NSFG Sample Findings into U.S. National Estimates

The 1982 NSFG is based on interviews with a scientifically selected sample of 7,969 women. The numbers shown in the tables of this *Bulletin*, however, are national numbers. For example, in Table 2 (page 12), the NSFG total sample of 7,969 women becomes 54,099,000 women and the sample of 4,577 white women interviewed becomes 45,367,000 white women. The percentages shown in the tables and figures are "weighted" national estimates.

Every woman between 15 and 44 years of age in the noninstitutional population of the conterminous U.S. had a chance—a known probability—of being chosen for the NSFG interview. One woman from a given place and type of household may have represented, say, 7,000 similar women, any one of whom might have been chosen, while another woman may have represented 15,000 similar women. To estimate the fertility and other characteristics of women in the U.S. as a whole, the information reported by each woman in the sample has been multiplied or "weighted" by the number of women she represented. In the 1982 NSFG, these weights ranged from under 1,000 to over 50,000 and averaged 6,789. The weights are on the low end for black women and teenagers because these groups were sampled at higher rates than other women.

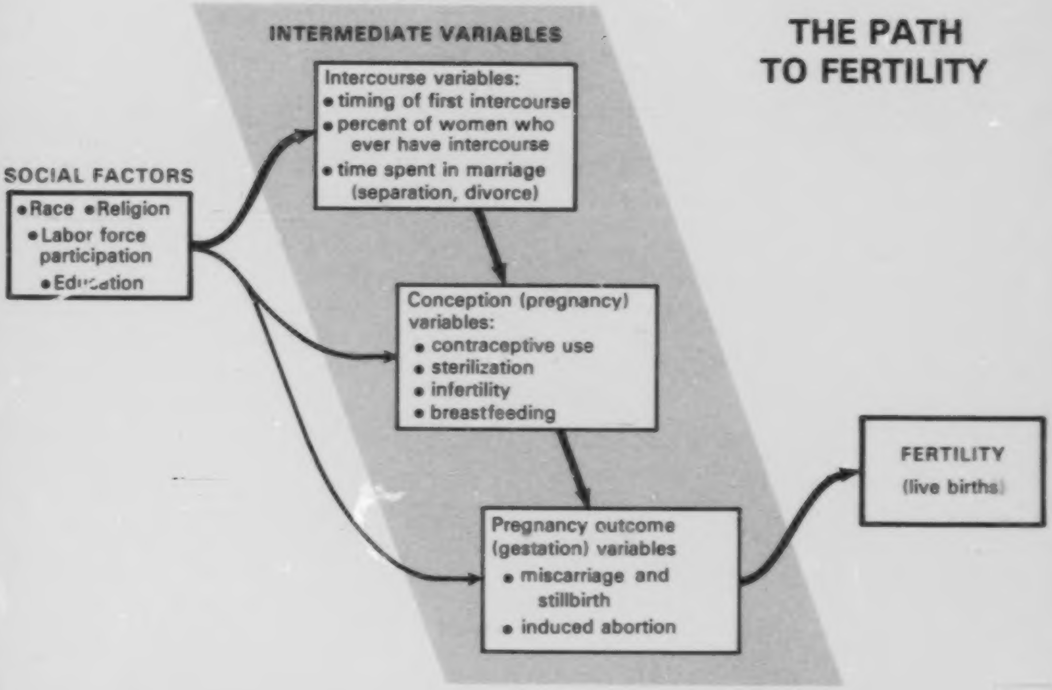
This weighting of the responses provides national estimates of percentages of women using the pill, for example, or visiting family clinics, or expecting no children, etc. These percentages in turn can be translated into estimates of the *number* of women using the pill or family planning clinics, etc.—information that is important for many uses in business, government, and other settings.

These statistics are national *estimates* rather than the exact numbers or percentages we would hope to obtain from a complete count of the population. Estimates from samples are much less expensive, more timely, and often more accurate than trying to get complete counts. However, just as we get varying numbers of heads and tails when we repeatedly toss five coins in the air, so estimates of population statistics will vary from one sample to another, even when the samples are selected in the same way. This variation in estimates from one sample to another is called the "standard error of the estimate." This is explained further in the Appendix (page 37). Knowing these standard errors is important for evaluating the sample results. For example, if the NSFG findings indicate that the pill is used by 39 percent of black women practicing contraception and 27 percent of white contraceptors, we would examine the standard errors of these percentages to test whether the difference between them is "statistically significant" or simply a chance difference because of sampling. The differences between groups or between years discussed in this *Bulletin* have all been tested for statistical significance.

In a few tables of the *Bulletin*, some percentages are enclosed in parentheses. This means that the standard error of that percent is at least 30 percent as large as the percentage itself, a measurement that is called the "relative standard error." For example, if an estimated 10 percent has a standard error of 3 percent, then the relative standard error is 3 divided by 10, which equals 0.3, or 30 percent. When an estimated percentage has such a large relative standard error, one must view it with caution.

Conceptual Framework

This report of 1982 NSFG results covers trends and differentials in fertility and factors affecting fertility, such as marriage and divorce, contraceptive practice, infertility, miscarriages, and stillbirths. Findings on factors affecting fertility are presented in line with the "intermediate


INTERMEDIATE VARIABLES
SOCIAL FACTORS
•Race •Religion
•Labor force participation
•Education
Intercourse variables:
• timing of first intercourse
• percent of women who ever have intercourse
• time spent in marriage (separation, divorce)
Conception (pregnancy) variables:
• contraceptive use
• sterilization
• infertility
• breastfeeding
Pregnancy outcome (gestation) variables
• miscarriage and stillbirth
• induced abortion
FERTILITY
(live births)

THE PATH TO FERTILITY

variables" framework suggested by demographers Kingsley Davis and Judith Blake.[10] Davis and Blake argued that social factors like race, education, and religion affect fertility only through their effect on intermediate variables. For example, the amount of education a woman has affects such intermediate variables as her age at first intercourse, age at first marriage, and use of contraception, and these in turn affect how many children she has. Similarly, in the past, religious affiliation influenced age at first marriage, the likelihood of divorce and remarriage, and choice of contraceptive methods, particularly the pill and rhythm methods. Davis and Blake's intermediate variables include "intercourse" variables, which measure the exposure of women to sexual intercourse, "conception" variables, which measure the chances that a pregnancy will occur among couples having intercourse, and "pregnancy outcome" variables, which measure the likelihood that a pregnancy will result in a live birth. We have modified the original Davis-Blake list to exclude variables that are not quantitatively important in the low-fertility setting of the U.S. Our list of intermediate variables is as follows (see also "The Path to Fertility" on this page):

1. Intercourse variables:
   (a) timing of first intercourse
   (b) percent of women who ever have intercourse
   (c) time spent in marriage (separation and divorce)
2. Conception (pregnancy) variables:
   (a) contraceptive use
   (b) sterilization
   (c) fecundity impairments (infertility)
   (d) breastfeeding
3. Pregnancy outcome (gestation) variables:
   (a) miscarriage and stillbirth
   (b) induced abortion

After a look at fertility trends in the past decade (Table 1), we describe 1982 NSFG findings on intercourse variables (Tables 2-4), conception variables, especially contraception (Tables 5-12), and pregnancy outcome variables (Tables 13-15).

Table 1. Children Ever Born, Wanted, and Expected by Ever-Married Women Aged 15-44: 1973 and 1982

(Ever-married women 15-44, percent distribution by children ever born and total births expected, average per woman of children ever born, wanted children ever born, and total births expected)

		Children Ever Born						
							Average per woman	
Women's characteristics	Number of women (thousands)	0	1	2	3	4 or more	Total	Wanted
		Percent distribution of women					Average	
Total								
1973	30,247	17.2	19.3	26.4	17.8	19.2	2.23	1.89
1982	34,935	17.9	21.6	31.6	18.0	10.9	1.90	1.70
White								
1973	26,795	17.9	19.0	27.0	18.2	17.9	2.16	1.89
1982	30,419	18.8	21.7	32.0	17.7	9.7	1.84	1.68
Black								
1973	3,109	10.7	21.9	21.8	14.7	30.8	2.90	1.93
1982	3,440	10.2	19.3	29.0	18.6	22.9	2.49	1.91
Protestant								
1973	19,726	16.6	19.8	26.7	18.0	18.8	2.23	1.87
1982	21,414	16.9	21.6	32.8	17.6	11.1	1.92	1.70
Catholic								
1973	8,583	16.4	17.7	25.5	17.9	22.5	2.37	2.05
1982	10,276	18.4	20.1	30.4	19.1	12.0	1.96	1.77
In labor force								
1973	13,284	25.7	19.4	22.7	16.0	16.3	1.94	1.61
1982	20,625	23.1	21.2	31.1	16.0	8.6	1.71	1.53
Not in labor force								
1973	16,963	10.7	19.2	29.4	19.3	21.6	2.46	2.11
1982	14,310	10.3	22.2	32.4	20.8	14.3	2.18	1.94
Education								
Less than 12 years								
1973	8,602	8.4	16.3	23.9	20.0	31.5	2.95	2.35
1982	6,576	11.2	17.9	25.8	21.3	23.8	2.51	2.07
12 years								
1973	14,299	17.1	21.0	27.4	18.5	16.0	2.08	1.81
1982	14,843	16.3	22.0	32.5	19.5	9.6	1.90	1.72
13 years or more								
1973	7,347	28.0	19.5	27.5	14.0	11.1	1.68	1.50
1982	13,515	22.8	23.0	33.4	14.7	6.0	1.61	1.50

Childbearing and Wantedness of Births

By 1976, the U.S. total fertility rate (the average number of children women would have altogether if they bore children throughout their childbearing years at the "age-specific" fertility rates of the current year) had fallen to a record low of 1.7 births per woman. This was down from 3.6 in 1955 and 2.9 in 1965—by any measure, a dramatic decine.[11] Since 1976, the total fertility rate has hovered around 1.8 births per woman. If continued, this rate would result in American women averaging considerably fewer than the 2.1 children per woman needed to replace the population in the long run.[12]

These low levels of fertility in the 1970s and 1980s are reflected in the data from the NSFG which show a decline in the average number of children already born

Total Births Expected					
0	1	2	3	4 or more	Average per woman
Percent distribution of women					*Average*
3.7	8.3	37.4	25.6	24.9	2.80
5.1	11.5	40.8	26.2	16.4	2.47
3.7	8.1	38.5	26.2	23.4	2.73
5.3	11.8	41.6	26.0	15.3	2.42
3.4	10.6	27.1	20.7	38.2	3.39
3.2	9.4	32.4	26.1	28.9	2.97
3.6	9.0	39.2	24.8	23.4	2.76
5.1	11.2	42.7	24.8	16.2	2.45
3.3	5.8	32.2	28.0	30.8	3.02
4.0	10.1	36.9	29.7	19.3	2.63
5.7	10.4	39.8	23.7	20.4	2.57
6.2	13.3	44.1	23.8	12.5	2.30
2.2	6.8	35.5	27.1	28.5	2.98
3.4	8.9	35.9	29.7	22.1	2.72
2.4	7.2	28.3	24.4	37.7	3.36
2.7	7.3	31.4	27.1	31.5	3.03
3.5	8.6	39.3	27.0	21.6	2.65
4.8	11.4	41.3	27.8	14.7	2.44
3.7	8.3	37.4	25.6	24.9	2.42
6.5	13.8	44.7	24.1	11.0	2.24

to ever-married women aged 15-44 from 2.2 children per woman in 1973 to 1.9 in 1982 (Table 1). Similarly, the average for ever-married women aged 40-44 (a good indicator of "completed family size") declined from 3.3 to 2.9 children per woman in these nine years (data not shown).

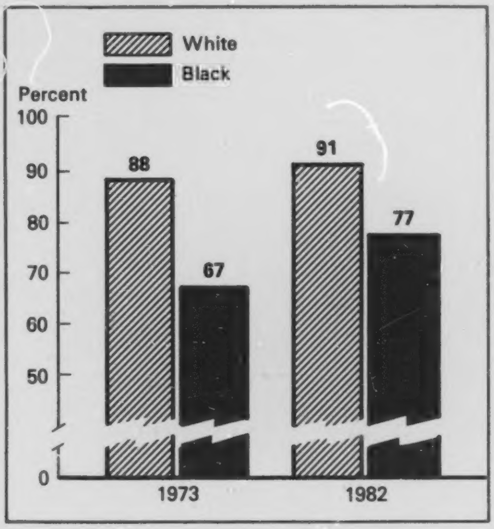
Table 1 shows that the 15 percent decline from 2.23 to 1.90 in the average for all ever-married women occurred because the proportion of women with four or more children dropped from 19 to 11 percent between 1973 and 1982, while the percent with two increased from 26 to 32. The figures stayed about the same for women with zero, one, or three children. Thus in 1982, ever-married women had continued to become mothers at about the same rate as in 1973, but were more likely to have stopped having children once they had two.

The number of pregnancies ending in live births that were wanted when they were conceived (wanted births) gives an indication of how many children women would have if they could control their fertility perfectly. Wanted births are defined as those that the woman, at the time of conception, wanted to have at some time in her life. These include pregnancies that occurred sooner or later than she planned, as well as those coming at the right time. The average numbers of wanted births shown in Table 1 cover children born up to the time of the interview, but not wanted pregnancies that had not yet occurred.

A bit less than half (42 percent) of the decline in fertility between 1973 and 1982 was in unwanted births (average children ever born fell .33 per woman; unwanted births, .14 per woman). The proportion of wanted births among those that ever-married women had already had increased from 85 to 89 percent. At the same time, the average *number* of wanted births among those ever-married women had declined from 1.9 to 1.7 per woman.

Table 1 also shows 1973-1982 trends in fertility by characteristics that historically have been important predictors of fertility levels—race, religious affiliation, whether or not a woman is in the labor force (working or looking for a job), and education. Past studies have found that, on average, black women have more children than white women, women not working outside the home have more than women who are, women with less than 12 years of schooling have more children than better-educated women, and Catholics have more than Protestant women.[13] Higher average fertility among black women is partly due to their lower

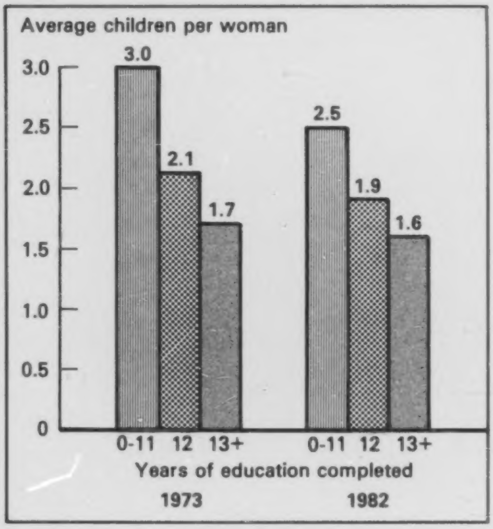
Figure 1. Percent of births to ever-married women that were wanted, by race: 1973 and 1982



Source: Table 1

average income and education. Differences in fertility by education reflect such factors as delayed childbearing by women who continue education beyond high school and better-educated women's greater opportunities to pursue activities other than motherhood. Labor force participation's association with fertility works both ways: women with few or no children (and thus fewer domestic responsibilities) are freer to work outside the home, and—turned the other way round—working creates disincentives or "opportunity costs" to childbearing, by providing women with income and alternative roles and interests that might have to be given up (at least temporarily) when children are born. In the 1960s, religious affiliation was labeled "the strongest of all major social influences on fertility,"[14] but the differences between Catholic and Protestant fertility recorded in the national surveys of the 1950s and 1960s have since narrowed considerably.

Figure 2. Average number of children ever born to ever-married women, by education: 1973 and 1982



Source: Table 1

In 1982 as in 1973, ever-married black women had borne more children, on average, than their white counterparts (2.5 per woman versus 1.8, in 1982). However, the average declined more for black than white women during the decade. Thus the absolute difference narrowed, although the relative difference remained about the same. Proportions of wanted births among those women had already had increased for both groups: from 67 to 77 percent for black women and 88 to 91 percent for white women (Figure 1).

Religious differences also narrowed from .14 to .04 children ever born per woman as Catholic fertility declined more than Protestant fertility between 1973 and 1982.

Differences by labor force status, however, were undiminished, as averages for women both in and out of the labor force fell in tandem. In 1982, women not in the labor force averaged 2.2 children each, versus 1.7 for women in the labor force. In 1982 as in 1973, about one in four ever-married women in the labor force was childless, compared with only one of every ten women not in the labor force. Averages of wanted births in both years were higher for women not in the labor force than for those who were (1.9 per woman versus 1.5, in 1982).

Differences by education narrowed

over these nine years but were still substantial in 1982 (Figure 2). In 1982, ever-married women with fewer than 12 years of school averaged 2.5 children apiece; women with 12 years, 1.9; and women with 13 years or more, 1.6. Women with 13 or more years of education were more than three times more likely than women with fewer than 12 years to be childless in 1973, and twice as likely in 1982.

Average numbers of wanted births declined in the two lower education groups, but the proportion of births that were wanted increased slightly in all three. In 1982, 93 percent of children already born to women with 13 or more years of education were wanted, compared to 82 percent for women whose education stopped short of high school graduation. In 1973, the proportions had been 89 and 80 percent.

Expected childbearing

Table 1 also shows the numbers of children women expect to have—those they already have plus births they say they expect before their childbearing years are over. Although studies have demonstrated that individual women often have more or fewer births than they expect, the averages for groups of women, especially married women, have turned out to be close to the mark in predicting their average lifetime fertility.[15]

The average number of expected births also declined between 1973 and 1982 for ever-married women aged 15-44, from 2.8 to 2.5 births per woman. The proportion of women expecting four or more births dropped from 25 to 16 percent, while the proportion expecting only one child increased from 8 to 12 percent. The percent expecting to remain childless was not significantly higher in 1982 (5 percent) than in 1973 (4 percent).

Differentials in average numbers of expected births generally mirrored those in average numbers of children already born. In both years, black women expected more births than white women, women not in the labor force expected more than women who were, and the least educated women expected more than women with 13 or more years of education. Catholic women also expected to have more children than Protestant women, although they had actually had about the same number up to the time of the 1982 survey. If Catholic and Protestant women do in fact live up to their expectations as of 1982, the religious fertility differential will reappear.

Exposure to Sexual Intercourse

The first set of intermediate variables through which social characteristics must work to affect fertility are those that influence the chances that a woman will have sexual intercourse and thus be exposed to the possibility of conception. Especially important here are the formation and dissolution of sexual unions.

Sexual unions run the gamut from casual sexual encounters to formal marriage. Extramarital sexual intercourse has increased greatly in recent years, as indicated by national studies of sexual behavior among teenagers in the 1970s.[16] This must be taken into account in any assessment of exposure to the risk of pregnancy. Nevertheless, formal marriage remains an important determinant of both sexual intercourse and the likelihood of childbearing. Thus this section focuses on marital status and the timing of entry into and exit from formal marriage, as well as on the exposure of all women, including the never-married, to sexual intercourse.

Proportions who ever had intercourse

Some seven in every eight (86 percent) of the 54 million women aged 15-44 in 1982 had had sexual intercourse at least once (Table 2, page 12). Thus the vast majority of American women of childbearing age have been exposed to the risk of pregnancy. Not all were currently sexually active; only 68 percent of all women were having intercourse during

Table 2. All Women and Never-Married Women Who Have Ever Had Sexual Intercourse, by Age and Race: 1982

Age	Number of women (thousands)			Percent who have had intercourse		
	Total	White	Black	Total	White	Black
			All women			
Total	54,099	45,367	6,985	86.3	86.0	89.7
15-19	9,521	7,815	1,416	46.9	44.9	58.9
15-17	5,122	4,119	821	32.2	30.1	44.1
15	1,474	1,191	209	19.2	17.9	28.0
16	1,601	1,302	260	30.4	28.8	41.6
17	2,046	1,626	352	43.0	40.1	55.4
18	2,327	1,967	302	58.1	54.8	77.0
19	2,072	1,728	293	70.7	69.0	82.0
20-24	10,629	8,855	1,472	85.4	84.5	93.2
25-44	33,949	28,697	4,097	97.6	97.7	99.0
			Never-married women			
Total	19,164	14,948	3,545	61.3	57.6	79.6
15-19	8,839	7,193	1,377	42.8	40.2	57.8
15-17	4,968	3,971	818	30.1	27.5	43.8
15	1,460	1,177	209	18.4	16.9	28.0
16	1,559	1,263	257	28.5	26.7	40.8
17	1,949	1,531	352	40.1	36.4	55.4
18	2,107	1,768	289	53.8	49.7	76.1
19	1,764	1,454	270	65.6	63.2	80.5
20-24	5,811	4,502	1,084	73.3	69.5	90.8
25-44	4,514	3,252	1,084	82.0	79.7	96.3

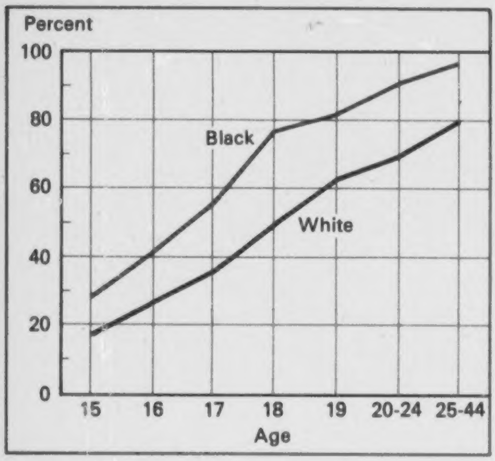
the week of the interview, and 77 percent had had intercourse at some time in the three months before the interview.

As we would expect, all ever-married women interviewed in the 1982 NSFG had had intercourse. However, two in five of the never-married women reported that they had never had intercourse. Since virtually all ever-married women have had intercourse, differentials in sexual activity by age and race are only meaningful for never-married women.

The proportion of never-married women who have ever had sexual intercourse rises sharply with women's ages. In 1982, the percentages were 43 for women aged 15-19, 73 for those 20-24, and 82 for women 25 and older. The rise was particularly rapid during the teenage years, from 18 percent of never-married girls age 15 to 66 percent of 19-year-olds. Adding in the 19-year-olds who had not yet had intercourse by the time of the interview but would before they turned 20, it can be surmised that more than two-thirds of never-married American women are beginning sexual experience while still teenagers.

Eighty percent of black never-married women aged 15-44 in 1982, compared to 58 percent of their white counterparts, had had sexual intercourse. Black women begin having intercourse earlier, as evident from their higher percentage of sexually experienced women at each age (Figure 3). This finding tallies with the national studies of teenagers' sexual activity during the 1970s. At ages 25 and older, the 1982 figures for never-married women were 96 percent for blacks and

Figure 3. Percent of never-married women who have ever had intercourse, by age and race: 1982



Source: Table 2

80 percent for whites. However, among *all* women 25 and older, the proportion of white women who had ever had intercourse was on a par with that of black women—probably because a larger percentage of white women were married—and both figures were virtually 100 percent (98 for white women, 99 for black women).

NSFG data suggest that the steep rise in premarital sexual intercourse among teenagers documented at least for the 1970s may be abating for whites and even reversing for blacks. Three nationwide surveys of women aged 15-19 directed by John Kantner and Melvin Zelnik of Johns Hopkins University put the proportions of white unmarried women aged 15-19 who had ever had sexual intercourse at 23 percent in 1971, 34 percent in 1976, and 42 percent in 1979.[17] The 1979 survey covered teenagers in metropolitan areas only. For black unmarried women aged 15-19 the figures were 52 percent in 1971, 62 percent in 1976, and 65 percent in 1979. Three years later, in 1982, the NSFG survey covering all areas of the country estimated premarital sexual activity among 15-19 year-olds still unmarried at the time of the survey at 40 percent for white women (compared to 42 percent in the 1979 Kantner-Zelnik survey) and 58 percent for black women (versus 65 percent according to the 1979 survey in metropolitan areas). NSFG researchers William Pratt and Gerry Hendershot conclude that this represents a leveling off of premarital sexual activity among white teenagers and a modest reversal of the trend among blacks.[18]

Marital status

Even though premarital sexual activity increased during the 1970s, marital status remains an important determinant of exposure to sexual intercourse and, in turn, the chances that a woman will become pregnant. As noted, all ever-married women aged 15-44 in 1982 had had intercourse, but only three out of five never-married women. Currently married women in the 1982 NSFG sample were more likely to have had intercourse in the three months prior to the interview than either never-married or previously married women.[19] Despite increasing levels of out-of-wedlock childbearing, as of 1981 four out of five births in the U.S. were still to married women.[20] Thus marriage and marital disruption (divorce, separation, or death of the husband) continue to be important intervening variables in explaining women's fertility levels.

Marital status in this report refers to formal marital status and marriage to legal marriage. However, women separated from their legal husbands are grouped along with widowed and divorced women in the previously married category (Table 3, page 14). Separated women are less likely to become pregnant than married women living with their husbands because, as NSFG findings confirm, they have sexual intercourse less often. The number of American women living in "informal marriages" with a partner of the opposite sex has more than tripled since 1970; in March 1983, Census Bureau statistics show that these 1.9 million unmarried couples made up 4 percent of all couple house-

Table 3. Marital Status of Women Aged 15-44: 1982

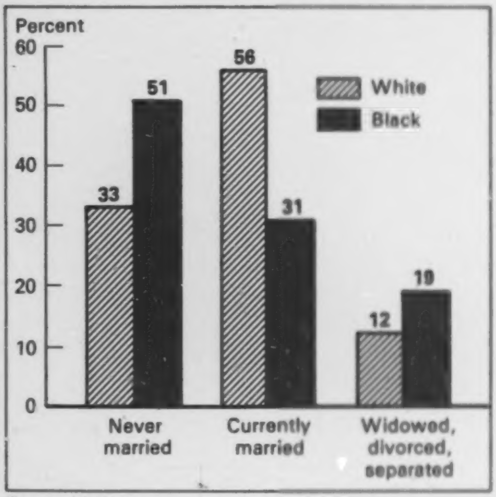
Characteristics	Number of women (thousands)	Never married	Currrently married			Previously married		
			Total	First marriage	Remar- riage	Wi- dowed	Div- orced	Sepa- rated
			Percent distribution of women					
Total	54,099	35.4	52.2	44.1	8.1	0.8	7.9	3.7
Age								
15-19	9,521	92.8	6.4	6.4	0.0	—	0.3	0.4
20-24	10,629	54.7	38.9	36.4	2.4	0.3	3.5	2.6
25-29	10,263	24.2	62.8	53.2	9.6	0.3	7.7	5.0
30-34	9,381	12.4	69.1	55.9	13.2	0.8	11.9	5.8
35-39	7,893	6.9	73.3	58.8	14.5	1.6	14.5	3.8
40-44	6,412	5.0	74.6	62.9	11.7	2.3	12.7	5.4
White	45,367	32.9	55.5	46.9	8.6	0.6	8.0	2.9
Black	6,985	50.8	30.5	25.6	4.9	1.4	7.7	9.7
Hispanic	4,393	33.7	52.3	45.2	7.0	0.8	7.1	6.1
Non-Hispanic	49,706	35.6	52.2	44.0	8.2	0.8	8.0	3.5
Protestant	31,298	31.6	55.6	45.1	10.5	0.9	7.9	4.0
Catholic	17,377	40.9	48.4	43.9	4.5	0.6	6.8	3.3
Other or no religion	5,424	40.2	44.4	38.9	5.5	0.4	11.2	3.8
In labor force	31,685	34.9	49.5	41.3	8.2	0.8	10.8	3.9
Not in labor force	22,414	36.2	56.0	48.1	7.9	0.7	3.7	3.5
Education								
Less than 12 years	13,465	51.2	36.0	27.4	8.6	0.8	6.8	5.3
12 years	20,257	26.7	60.2	51.1	9.1	0.9	8.4	3.8
13 years or more	20,377	33.7	54.9	48.1	6.8	0.6	8.1	2.7

holds.[21] Five percent of never-married women and 9 percent of previously married women interviewed in the 1982 NSFG were living in such informal marriages. These women are presumably as sexually active as currently married women are, but may be less likely to have children intentionally.

Categorizing a population of women according to current marital status is a convenient way of summarizing their present and past experience with marriage and marital disruption. In 1982, 52 percent of women aged 15-44 were currently married, another 12 percent were previously married (widowed, divorced, or separated), and some 35 percent had never married (Table 3). Forty-four percent of all women of childbearing age, and the great majority of currently married women, were married to their first husbands, while 8 percent were remarried. Combining remarried and previously married women indicates that about one in five women aged 15-44 and almost one in three ever-married women of this age had experienced marital disruption. Divorce was the leading cause of disruption among previously married women, but separation (which often leads to divorce) also accounted for a substantial proportion. Fewer than one in 15 previously married women were widowed, a reflection of the U.S.'s relatively low death rates at ages below 45.

The proportion never-married decreased sharply as age increased, while the proportion ever-married (currently or previously) increased.* The proportion ever-married went up most rapidly between the 15-19 age group and the 30-34 age group and then leveled off, as did the

Figure 4. Percent distribution of women 15-44, by marital status and race: 1982

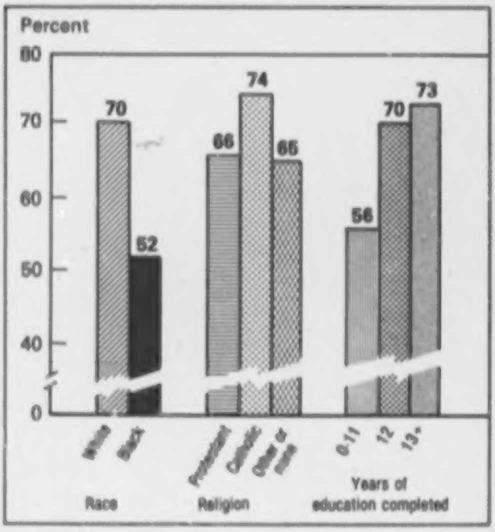


Source: Table 3

proportions of both divorced and remarried women. The leveling off in the percentages divorced and remarried among women aged 30-44 reflects the sharp increase in divorce rates among women marrying in recent years.[22] The women aged 40-44, who married earlier, had experienced lower divorce rates than the women aged 30-34. As a result, the proportion of ever-married women who were still married to their first husbands was about the same for women aged 40-44 (66 percent) as it was for women aged 30-34 (64 percent), even though women aged 40-44 in 1982 had had more time in which to end their marriages.

Black and white women's marriage patterns differ sharply (Figure 4). Black women were much more likely than white women never to have married (51 versus 33 percent) or to be previously married (19 versus 12 percent), and thus far less likely to be currently married (31 compared to 56 percent). Only about half of ever-married black women, compared to more than two-thirds of white women, were still married to their first husbands (Figure 5). Previously married black women were more likely to be separated and less likely to be divorced than their white counterparts.

Figure 5. Percent of ever-married women whose first marriage is intact: 1982



Source: Table 3

Marital patterns also differed by religious affiliation, labor force participation, and education, although less than by age and race. Protestant and Catholic women were about equally likely to be married to their first husbands (45 and 44 percent, respectively). But because Catholic women were less likely than Protestants ever to have married, the proportion of *ever*-married women still in their first marriage was higher for Catholics (74 percent) than for Protestants (66 percent, Figure 5). Women in the labor force at the time of the survey were about as likely to have been married as women who were not employed outside the home, but they were almost three times more likely to be currently divorced

---

*These differences by age reflect the simultaneous effects of age, cohort, and period factors. For example, women aged 40-44 are more likely to have ever married than women, say, aged 20-24, because they are older and have had more years in which to marry. If the effects of age are removed by comparing, for example, the percent of older and younger women married by ages 20-24, proportions ever-married might still differ because of differences in marriage rates between the two time periods in which each group was marrying, or differences between birth cohorts in their eventual rates and pace of marrying.

Table 4. Marital Dissolution Among Ever-Married Women Aged 15-44 in 1982

Characteristics	Percent first marriage dissolved[a]		Percent remarried after divorce or widowhood	
	Within 5 years	By date of survey	Within 5 years	By date of survey
Total	16.4	31.7	49.4	60.5
Age at first marriage				
19 or younger	20.3	40.9	56.8	69.1
20 or older	12.6	22.9	35.7	44.6
White	15.4	30.1	51.6	61.9
Black	26.0	47.9	30.3	48.4
Hispanic	18.3	31.8	40.9	58.7
Non-Hispanic	16.2	31.7	50.0	60.6
Protestant	16.7	34.1	53.2	65.2
Catholic	14.6	25.8	42.4	53.5
In labor force	18.4	36.6	45.2	55.8
Not in labor force	13.4	24.7	58.9	71.2
Education				
Less than 12 years	23.3	43.9	51.8	62.6
12 years	15.1	30.3	50.1	60.6
13 years or more	14.4	27.4	46.7	58.9

[a] By divorce, widowhood, or separation.

(11 versus 4 percent). Women with 13 or more years of education were less likely to have married than women finishing high school only,* while *ever*-married women with fewer than 12 years of education were less likely to have remained married to their first husbands than ever-married women who at least graduated from high school and those who went on for more education (Figure 5).

Timing of marital events

Since most births still occur within marriage, the proportion of their childbearing years that women are married has a strong impact on fertility. Delayed marriage and marital disruption can reduce fertility. Arland Thornton has shown that women whose marriages end during their childbearing years do in fact have fewer children, on average, than women whose marriages remain intact, although women who remarry are often able to make up for lost time.[23] In this section we present 1982 NSFG data on the prevalence and timing of marital disruption and remarriage, which directly influence the time spent in marriage.

American women have been marrying later in recent years, which has increased the time spent out of marriage in the early reproductive years. Marriage registration data indicate that women's median age at first marriage rose from 20.3 to 22.0 between 1963 and 1982.[24]

Time spent out of marriage during the childbearing years has also increased because divorce rates have more than doubled since the early 1960s.[25] As

---

*The high percentage of never-married among women with less than 12 years of education (51 percent), shown at the bottom of Table 3, stems from the many teenagers still in school who fall into this education category. Among women 20 and older, the proportions never-married are 18 percent for women with fewer than 12 years of school, 17 percent for women with 12 years, and 31 percent for women with 13 years or more.

Table 4 shows, 32 percent of the first marriages of ever-married women aged 15-44 in 1982 had been dissolved by divorce, separation, or death—16 percent within five years of marriage. The statistics are similar for women first married five or more years before the interview: 36 percent of these marriages had ended by the interview date, and 17 percent within five years of the marriage (not shown in Table 4). The relationships with the characteristics shown in Table 4 were also similar when these calculations were limited to women married five or more years before the interview.

One of every five first marriages of women who were under 20 when they married had ended within five years, compared with one out of eight for women married at 20 or later. Twenty-six percent of black women's first marriages were dissolved within five years, versus 15 percent for white women. First marriages of women in the lowest education group were more likely to have ended within five years than those of the other two education groups. Catholic and Protestant women had similar rates of marital disruption within five years of marriage, but Protestant women's marriages were more likely to have ended by the time of the survey. Dissolved marriages were also more common among women currently in the labor force than among those not in the labor force. Many of these differences are reflected in the marital status differentials shown in Table 3.

A majority of women whose first marriages had ended in divorce or widowhood had remarried: 61 percent by the time of the interview and 49 percent within five years of divorce or the husband's death. Again, the probability of remarrying within five years varied considerably from one segment of the population to the next. Women who first married before age 20 were more likely to remarry than women who married later, presumably because they were also younger when their first marriages ended and could seek new partners from a larger pool of unmarried men of about their own age. Remarriage within five years was more common among divorced and widowed white women than among their black counterparts, and among Protestants compared to Catholics. More women not in the labor force at the time of the survey had remarried than women who were. However, proportions remarrying did not vary significantly by Hispanic origin or educational attainment.

Likelihood of Conception

Once a woman is having intercourse, the conception variables affect her chances of becoming pregnant. These are contraception, infertility, and breastfeeding. Contraception, including contraceptive sterilization, is much the most important of these nowadays in the U.S., as John Bongaarts has shown.[26]

Contraceptive use

This section describes American women's contraceptive use and highlights the profound changes that have occurred since 1965, changes that have sharply reduced the proportion of unwanted or unplanned births and, in some cases, slightly increased the proportion of births coming sooner than planned, as described later. An important part of this change is the shift to the more effective contraceptive methods that have become available in the past two decades.

Information collected in the 1973 and 1976 NSFG surveys made it possible to measure the actual, as opposed to the theoretical, effectiveness (or "efficacy") of the major contraceptive methods in use in the U.S. in the 1970s. Table 5 (page 18) shows estimates of the percentage of women who had an unintended pregnancy in the first year of use of each method (the "failure rate"), by whether they intended to have no more children ("prevent") or wanted to postpone their next birth ("delay"). The table

Table 5. Contraceptive Method Effectiveness

(First-year failure rates by contraceptive intent, and first-year discontinuation rates, by method of contraception: Married women, 1970-75. Numbers in percent.)

	Failure rate			
		Intent		
Method	Total	Prevent	Delay	Discontinuation rate
All methods	6.0	4.0	8.3	30.7
Sterilization	0.0	0.0	—	—
Pill	2.5	2.4	2.5	25.9
IUD	4.8	2.4	7.1	21.4
Condom	9.6	7.1	12.3	38.1
Diaphragm	14.4	11.4	17.2	35.7
Foam, cream, jelly, suppository	17.7	16.6	18.4	46.2
Rhythm[a]	18.8	11.6	25.0	22.6
Other	11.5	4.9	18.9	33.5

Source: W. Grady et al., "Contraceptive Failure and Continuation Among Married Women in the United States: 1970-75," *Studies in Family Planning*, Vol. 14, No. 1 (January/February 1983) Tables 1 and 7, pp. 12 and 16.

Failure rate = percent of women having unintended pregnancy in first year of method use.
Prevent = intends no more children.
Delay = wants to postpone next birth.
Discontinuation rate = stops using method in first year of use.

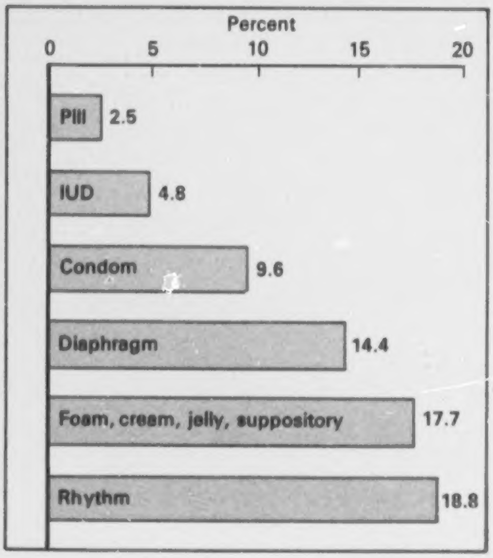
[a] In this and all following tables, rhythm (or periodic abstinence) methods include calendar rhythm and natural family planning, or temperature rhythm, methods.

also shows the percentage who stopped using the method during the first year ("discontinuation rate").

Sterilization ranks lowest in failure rates—zero—followed by the pill, with a failure rate of 2.5 percent, and the IUD, at 4.8 percent (Figure 6). Because of their markedly lower failure rates (under 5 percent), these methods are classified as "more effective" in this report. The "less effective" methods include the condom (with a failure rate of 9.6 percent), the diaphragm (14.4 percent), foam, cream, etc. (17.7 percent), and rhythm (18.8 percent). The failure rate was higher for women delaying births than for women trying to prevent further births for every method except sterilization (which is used only by women or men intending to have no more children). The methods with higher failure rates also tend to have higher discontinuation rates.

Four out of five ever-married women interviewed in the 1982 NSFG whose first marriage had taken place in 1975 or

Figure 6. Percent of married women having an unintended pregnancy within first year of contraceptive use, by method: 1970-75



Source: Table 5

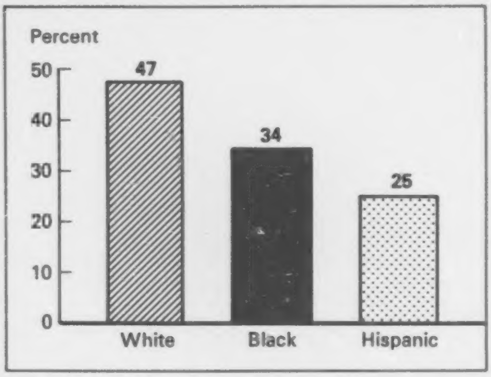
Table 6. Contraception at First Intercourse of Women Aged 15-44 in 1982

(Percent of women 15-44 in 1982 who used a contraceptive method at first intercourse and percent distribution of women who used a method, by type of method)

Characteristics	Percent who used a method at first intercourse	Percent distribution of those using contraception, by method						
		Pill	IUD	Diaphragm	Condom	Rhythm	Withdrawal	Other
Total	44.5	28.2	0.5	1.9	38.5	5.3	19.1	6.5
Age in 1982								
15-19	48.2	17.3	0.1	0.2	46.6	4.3	27.2	4.5
15-17	40.2	14.6	0.2	—	51.4	7.6	24.7	1.5
20-44	44.1	29.4	0.6	2.1	37.6	5.4	18.1	6.7
White	46.6	28.0	0.6	2.1	37.4	5.5	20.6	5.9
Black	33.6	28.9	0.2	1.1	46.9	2.9	8.3	11.7
Hispanic	24.7	38.5	—	1.5	32.3	0.8	16.8	10.1
Non-Hispanic	46.2	27.7	0.5	1.9	38.8	5.5	19.2	6.3
Age at first intercourse								
17 or younger	40.6	19.8	—	0.7	43.7	4.1	25.9	5.8
18 or older	47.8	34.3	0.9	2.8	34.8	6.2	13.9	7.0
Protestant	44.7	28.9	0.7	1.9	37.6	4.8	18.5	7.5
Catholic	42.6	25.9	0.4	1.8	38.7	6.8	21.4	5.0
Other or no religion	49.0	30.0	—	2.5	42.9	4.0	15.7	4.9
Ever-married	42.6	30.7	0.6	2.5	37.6	4.6	16.7	7.2
Never-married	50.1	21.8	0.3	0.4	40.9	7.0	25.1	4.5

later reported having had intercourse before marriage.[27] With such premarital exposure to intercourse, early contraceptive use—whether or not a method is used and which one—obviously has an important bearing on whether premarital pregnancy occurs. As seen in Table 6, only 45 percent of women aged 15-44 in 1982 had used a contraceptive method the first time they had intercourse. The figures were much lower for black women (34 percent) and Hispanic women (25 percent), as Figure 7 shows, and also lower for women under 18 at first intercourse (41 percent) than for those 18 and older (48 percent).

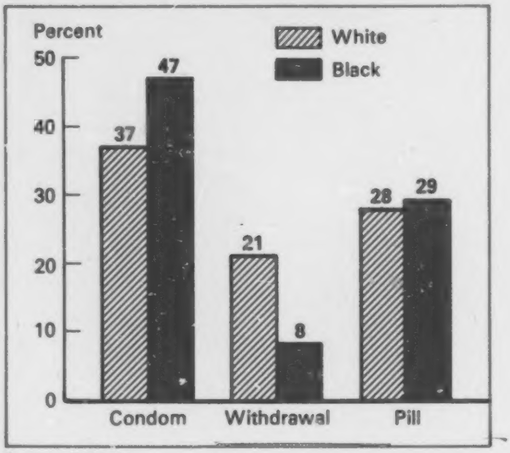
Figure 7. Percent of white, black, and Hispanic women 15-44 in 1982 who used a contraceptive method at first intercourse



Source: Table 6

Among women who did use contraception when they first had intercourse, the most common methods were the condom (39 percent), the pill (28 percent), and withdrawal (19 percent). White women were much more likely to use withdrawal and less likely to use the condom at first intercourse than black women (Figure 8, page 20). Hispanic women were more likely to use the pill at first intercourse than other women. Women who had intercourse before they were 18 were much more likely to use less effective methods—withdrawal or the condom—and much less likely to use the pill than women who began inter-

Figure 8. Method used at first intercourse among women 15-44 in 1982 who used a method at first intercourse, by race



Source: Table 6

course later. Protestant and Catholic women differed little in methods used at first intercourse. Catholic women were only slightly more likely to use one of the rhythm—or periodic abstinence—methods (7 percent) than Protestant women (5 percent). (Rhythm methods include calendar rhythm as well as natural family planning, or temperature rhythm.)

Current contraceptive use, 1982

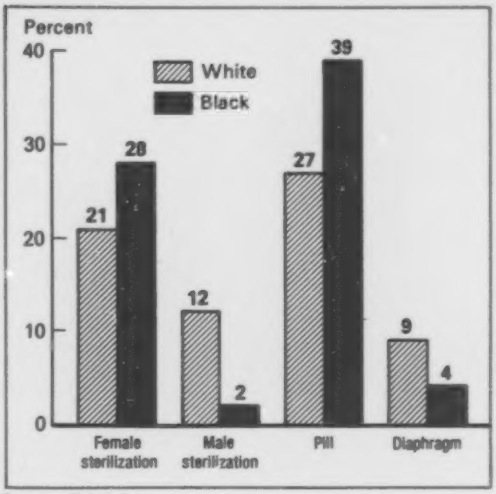
Table 7 shows the percentages of American women currently using a contraceptive method, in 1982, and the percentages of contraceptors using different methods. Overall, about 29.5 million women were currently using some method of contraception in 1982—55 percent of the 54 million women aged 15-44. The percentage of women currently using contraception is affected by (a) the proportions who have ever had, and are currently having, sexual intercourse, and the proportions who are (b) currently pregnant, recently pregnant (postpartum), or trying to become pregnant, or (c) sterile for noncontraceptive reasons. The low proportions currently using contraception among teenagers (24 percent) and never-married women (35 percent) reflect the higher proportions of these women who have never

Table 7. Current Contraceptive Use: 1982

(Women aged 15-44, percent using any method, and percent distribution of contraceptors by method)

Characteristics	Number of women (thousands)	Percent using any method	Percent distribution of those using contraception, by method							
			Female sterilization	Male sterilization	Pill	IUD	Diaphragm	Condom	Rhythm	Other
Total	54,099	54.5	21.9	10.8	28.6	7.3	8.3	12.2	4.0	5.7
Age										
15-19	9,521	24.2	—	0.4	63.9	1.3	6.0	20.8	2.0	4.7
20-24	10,629	55.5	3.9	3.6	55.4	4.2	10.3	10.7	3.4	7.5
25-29	10,263	64.9	13.2	5.6	35.1	10.4	12.6	10.9	4.5	6.6
30-34	9,381	64.6	27.9	15.0	16.9	9.5	8.3	12.8	4.1	4.0
35-39	7,893	60.4	41.1	17.7	5.9	7.7	4.0	11.9	4.6	5.2
40-44	6,412	59.3	44.4	22.4	1.2	6.3	4.2	11.3	4.0	5.5
White	45,367	55.5	20.8	12.1	27.2	7.0	9.0	12.9	4.0	5.7
Black	6,985	50.6	28.0	1.5	39.1	9.4	3.6	6.4	3.2	6.8
Never married	19,164	35.1	3.3	1.8	53.2	5.5	13.5	11.7	2.5	7.4
Currently married	28,231	67.9	25.6	15.4	19.8	7.1	6.7	14.4	4.7	5.3
Widowed, divorced, or separated	6,704	53.4	37.0	3.5	29.5	12.0	6.9	1.6	2.5	4.6
Protestant	31,298	54.6	25.1	12.6	29.7	6.7	5.4	10.4	3.1	5.5
Catholic	17,377	52.5	17.5	9.1	27.7	6.9	9.7	15.7	6.0	6.5
Other or no religion	5,424	60.3	17.0	6.4	25.3	11.7	19.3	12.4	2.4	4.8

Figure 9. Percent of currently contracepting women using female or male sterilization, pill, or diaphragm, by race: 1982



Source: Table 7

had, or are not currently having, sexual intercourse. To control for these variations, the remainder of Table 7 displays the percentage of *contraceptors* using each method.

If male and female sterilization are counted as separate methods, then the pill, used by 8.4 million women or 29 percent of contraceptors in 1982, is the leading method, followed by female sterilization, used by 6.4 million women (22 percent of contraceptors), the condom (12 percent), and male sterilization (11 percent). If male and female sterilization are counted as one method, then sterilization ranks first, used by 9.7 million couples, or 33 percent of contraceptors in 1982. The percentages using male and female sterilization go up with women's ages, especially after age 30. For female sterilization, the rise is from 4 percent at ages 20-24 to 44 percent at ages 40-44; for male sterilization the increase is from 4 percent at 20-24 to 22 percent at 40-44. For the pill the picture is dramatically reversed: 64 percent of contraceptors aged 15-19 were using the pill in 1982 but only 1 percent of contraceptors aged 40-44.

As shown in Figure 9, black contraceptors were more likely to be using female sterilization (28 percent) than white contraceptors (21 percent). The same was true of the pill: 39 percent of black contraceptors but only 27 percent of white contraceptors were using oral contraceptives. On the other hand, black women using contraception were far less likely than white women to be relying on male sterilization; a scant 2 percent reported that their partners were sterilized, compared with 12 percent of white contracepting women. The proportions of black contraceptors using one of the more effective methods—the pill, IUD, or male or female sterilization—was 78 percent, versus 67 percent of white contraceptors. Thus black contraceptors are now more likely than white contraceptors to use the more effective female methods.

Differences in contraceptive use by marital status reflect differences in ages, childbearing intentions, and the frequency and regularity of intercourse. Never-married women are younger than ever-married women, on average, and are more likely to be intending to have children in the future. More than half (53 percent) of never-married contracepting women were using the pill, followed a long way after by the diaphragm (14 percent) and condom (12 percent). Among currently married contraceptors, female sterilization ranked first (26 percent), then the pill (20 percent), male sterilization (15 percent), and the condom (14 percent). The leading methods among widowed, divorced, or separated contracepting women were female sterilization (37 percent) and the pill (30 percent).

Protestant contraceptors were considerably more likely to be using female sterilization than Catholic and other women (25 percent, versus about 17 percent). The diaphragm was used by 5 percent of Protestant contraceptors, 10 percent of Catholics, and 19 percent of contracepting women with other or no religious affiliations. Women in the "other or no religion" category also had a higher

Table 8. Contraceptive Use of Married Women, by Intent to Have More Children: 1965, 1973, 1982

(Percent distribution of currently married contraceptors aged 15-44, by method used and intent to have more children)

Contraceptive method and race	Total[a]			Intent to have more children					
				Intend no more			Intend more		
	1965	1973	1982	1965	1973	1982	1965	1973	1982
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More effective	37.5	69.2	67.8	38.1	68.8	76.4	39.5	71.2	51.4
Female sterilization	7.2	12.3	25.6	10.2	18.7	38.2	—	—	—
Male sterilization	5.2	11.2	15.4	7.3	16.9	23.0	—	—	—
Pill	23.9	36.1	19.8	19.5	25.3	9.2	38.1	61.1	44.6
IUD	1.2	9.6	7.1	1.2	7.9	6.0	1.4	10.1	6.8
Less effective	62.5	30.8	32.2	61.9	31.2	23.6	60.5	28.8	48.6
Diaphragm	9.9	3.4	6.7	11.3	3.5	3.1	5.8	3.7	15.4
Condom	22.0	13.5	14.4	22.4	13.8	12.3	19.1	12.6	18.4
Foam	3.3	5.0	2.9	2.4	4.3	2.2	5.5	5.8	3.4
Rhythm	10.8	4.0	4.7	9.2	4.3	3.5	14.3	3.1	6.2
Withdrawal	5.7	2.1	1.7	6.0	2.4	1.0	4.7	1.5	3.3
Douche	5.0	0.8	0.2	4.9	1.0	0.3	5.3	0.5	0.1
Other	5.8	1.9	1.5	5.7	1.9	1.2	5.7	1.7	1.9
White	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More effective	37.1	68.4	67.4	37.3	67.8	76.1	40.7	70.8	50.8
Female sterilization	6.5	11.6	24.7	9.1	17.4	37.0	—	—	—
Male sterilization	5.5	11.9	16.2	7.8	17.8	24.3	—	—	—
Pill	24.0	35.6	19.5	19.3	24.8	8.8	39.5	61.1	44.4
IUD	1.1	9.4	7.0	1.1	7.8	6.0	1.2	9.7	6.4
Less effective	62.9	31.6	32.6	62.7	32.2	23.9	59.3	29.2	49.2
Black	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More effective	40.3	81.0	73.1	45.4	81.0	77.5	27.6	83.0	65.3
Female sterilization	15.3	22.7	34.4	21.4	36.3	51.5	—	—	—
Male sterilization	0.6	1.7	3.6	0.8	2.7	5.3	—	—	—
Pill	21.6	43.8	25.5	20.6	30.6	14.4	24.6	67.7	50.1
IUD	2.8	12.7	9.6	2.6	11.4	6.2	3.0	15.3	15.2
Less effective	59.7	19.0	26.9	54.6	19.0	22.5	72.4	17.0	34.7

[a] Total includes women who were uncertain about their intent to have more children, and women who disagreed with their husbands about it.

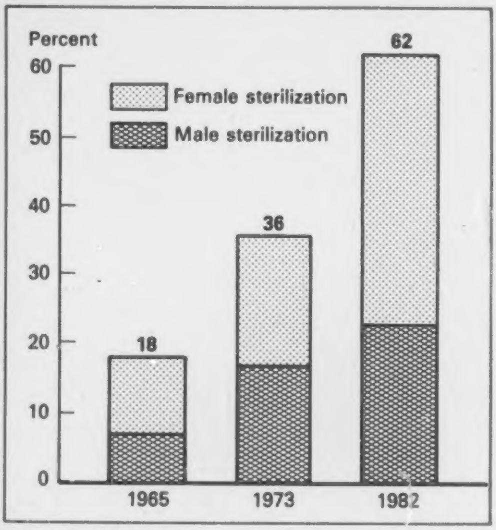
Note: "More effective" = methods whose first-year failure rates are less than 5 percent. "Less effective" = methods whose failure rates are over 5 percent. See Table 5 for the failure rates of selected methods.

proportion using the IUD (12 percent) than Protestant or Catholic women (7 percent each). As in earlier surveys,[28] Catholic contraceptors were still more likely than Protestant contraceptors to be using rhythm, or periodic abstinence (6 percent versus 3 percent). But the proportions currently using the pill in the two religion groups were very similar (28 percent of Catholic contraceptors; 30 percent of Protestants).

Trends among married couples

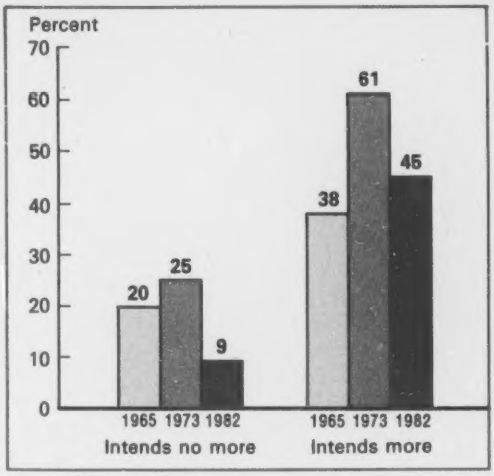
Contraceptive practice has changed dramatically in the U.S. since 1965, with the rise and subsequent decline of the pill and the rise of male and especially female sterilization.[29] The story is told in Table 8, which shows methods used by currently married women who were using contraception in 1965, 1973, and 1982, by whether or not they intended to have

Figure 10. Percent of contracepting couples intending no more children who were using female or male sterilization: 1965, 1973, 1982



Source: Table 8

Figure 11. Percent of currently married contracepting couples who were using the pill, by intent to have more children: 1965, 1973, 1982



Source: Table 8

more children. In the eight years from 1965 to 1973, the proportion using the more effective methods (sterilization, pill, or IUD) soared from 38 to 69 percent, but nine years later, in 1982, was virtually unchanged at 68 percent. This is because the main trend between 1973 and 1982—away from the pill to sterilization—was from one of the "more effective" methods to another.

In 1965, the leading methods were the pill, condom, rhythm, and diaphragm. By 1982, the leading methods were female sterilization, the pill, male sterilization, and the condom. The proportion using the pill peaked at 36 percent in 1973 and declined to 20 percent in 1982. But female sterilization increased steadily from 7 percent in 1965 to 12 percent in 1973 and then more than doubled to 26 percent in 1982, while male sterilization rose from 5 percent in 1965 to 15 percent in 1982.

The figures by intent to have more children reveal even larger contrasts. Among couples intending to have no more children, the proportion using male or female sterilization more than tripled between 1965 and 1982, from 18 to 62 percent (Figure 10). The rise in female sterilization among these couples was particularly rapid between 1973 and 1982: from 19 to 38 percent. Meanwhile, use of the diaphragm and condom by couples intending no more births dropped by half between 1965 and 1973, from 34 to 17 percent, but then edged down only to 15 percent in 1982.

Contracepting couples who intend to have one or more births are trying to delay those births. They tend to be younger and have fewer children than contracepting couples trying to prevent further births ("intend no more"). In all three survey years, the leading method among couples intending to have more births was the pill, but the proportion peaked at 61 percent in 1973 and dropped to 45 percent in 1982 (Figure 11). Between 1973 and 1982, while pill use was falling by 17 percentage points, the proportion of these couples using the diaphragm or condom went up by 18 percentage points (16 to 34 percent).

Among couples intending *no* more children, the proportion using the more effective methods increased from 69 to

Table 9. Use of Family Planning Services: 1982

(Number of family planning visits in the 12 months before the 1982 interview per 1,000 women who had ever had intercourse and were not sterile before February 1979)

Characteristics	All sources	Private medical services	Clinics	Counselors
		Source of services		
	Visits per 1,000 women			
Total	1,078	657	385	36
Age				
15-24	1,447	702	673	71
15-19	1,581	609	867	105
25-34	1,043	743	279	21
35-44	482	380	96	7
White	1,034	671	323	39
Black	1,337	557	756	24
Hispanic	1,212	673	524	15
Non-Hispanic	1,065	656	372	38
Never married	1,227	534	636	56
Currently married	1,022	743	251	28
Widowed, divorced, or separated	971	585	360	26
Education				
Less than 12 years	1,129	463	630	35
12 years	1,059	666	354	39
13 years or more	1,070	747	288	34

76 percent between 1973 and 1982, because sterilization increased. Among couples intending *more* children, however, the proportion of contraceptors using the more effective methods dropped subtantially, from 71 to 51 percent. The main reasons for this were the large drop in pill use (Figure 11), a decrease in the percentage using the IUD (10 to 7 percent), and the increase in the proportion using the diaphragm or condom. The diaphragm was used primarily to end childbearing in 1965, but by 1982 was a method used mainly to delay the next birth.

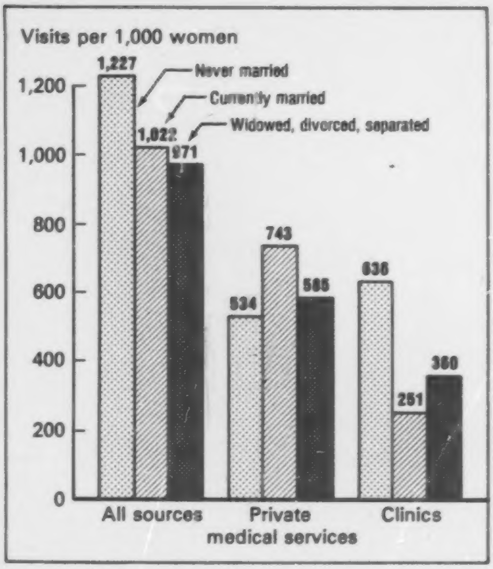
Married black contraceptors were more likely to use the pill than white contraceptors in both intent categories in both 1973 and 1982, but not in 1965. In all three survey years, black contraceptors were a great deal more likely than whites to use female sterilization, and much less likely to use male sterilization.

Family planning services

Women seek family planning services for information about contraception, to obtain or renew their methods of contraception, and for other related medical and counseling services. Use of family planning services is not an intermediate variable in the Davis-Blake framework, but is closely linked with contraceptive practice. The most effective methods of contraception—sterilization, pill, and IUD—all require at least one family planning visit to begin use.

In the 12 months before the 1982 NSFG interview, women used family planning services* at the rate of 1,078 visits per 1,000 women per year (or about one visit per woman per year). This is shown in Table 9, which lists rates per

Figure 12. Number of family planning visits in last 12 months per 1,000 women, by marital status and source of service: 1982



Source: Table 9

1,000 women for family planning visits made during the 12 months before the interview. These statistics refer to women of all marital statuses who were not sterile before February 1979 and who had ever had sexual intercourse.

Visit rates declined sharply with age. Teenagers had the highest annual visit rate to all sources combined (1,581 per 1,000). The rate declined from 1,447 for women aged 15-24 to 482 for women aged 35-44. Visit rates to all sources combined were higher for black women than white women, and for never-married women compared with ever-married women. There were no significant differences in the rates by ethnic origin (Hispanic/non-Hispanic) or education.

Variations in visit rates by age, race, and marital status reflect the patterns of contraceptive use by these groups. Use of the pill—the leading method among young and never-married women—requires repeated visits to a physician or a clinic to renew the prescription and check for side effects. By contrast, sterilization—the most popular method for older and ever-married women—normally requires only a few visits over a short period. Black contracepting women rely more heavily than white women on methods requiring medical services (except the diaphragm), and this difference is reflected in their higher visit rates. Life-cycle factors may also shape the pattern of visits by age and marital status. Young never-married women may make heavy use of family planning services in order to learn about contraceptive methods, and they may also use services frequently because their family planning needs change often if they shift in and out of periods of having intercourse and from one partner to another.

Overall, women visited private medical services (private physicians in their own or a group practice) at a higher rate than clinics (657 compared with 385 visits per 1,000 women). However, sources of family planning services varied by age, race, marital status, and education. Teenagers and never-married women made the majority of their visits to clinics, while women aged 25-44 and ever-married women made the vast majority of their visits to private medical services. Differences in sources of family planning services by marital status are shown in Figure 12. Clinic visits outnumbered visits to private physicians among black women and women who had completed fewer than 12 years of school, while visits to private physicians outnumbered clinic visits among white women and women with higher educational attainment.

Table 10 (page 26) shows the percentages of women currently using a method requiring a prescription—the pill, IUD, or diaphragm—who first obtained

---

*Family planning services were defined to include (1) *counseling* for problems with or worries about sexual intercourse, an unwanted pregnancy or one that occurred at a bad time, having a sterilizing operation, or birth control; (2) a *checkup* or *medical test* for correct use, fit, or position of a birth control method, or health problems from using a birth control method, or a pregnancy test; and (3) a visit to a physician or clinic to *obtain* a new method of birth control, or to *renew* a method already being used.

Table 10. Contraceptors Who First Obtained Current Method at a Clinic: 1982

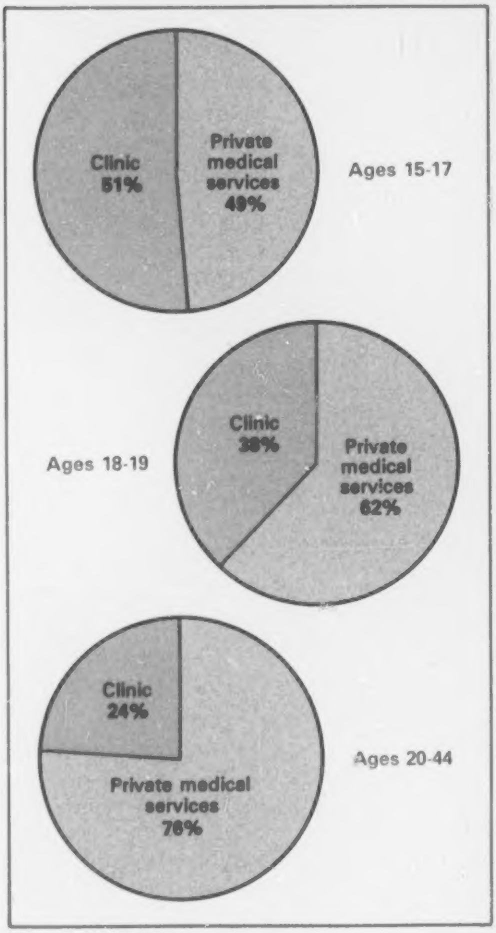
(Percent of women 15-44 using the pill, IUD, or diaphragm who first obtained that method at a clinic)

	Contraceptive method	
Characteristics	Total[a]	Pill
Total	27.2	26.9
Age		
15-19	43.6	42.0
15-17	53.1	51.2
18-19	39.7	38.0
20-44	24.8	23.8
White	24.3	23.1
Black	44.8	45.8
Never married	40.0	36.2
Currently married	17.8	18.1
Widowed, divorced, or separated	26.0	(27.4)

[a] Total includes pill, IUD, and diaphragm only.

( ) indicates that the statistic has a relative standard error of 0.3 or greater (see box on page 6 for explanation).

Figure 13. Percent distribution of women currently using the pill by source from which it was first obtained, by age: 1982



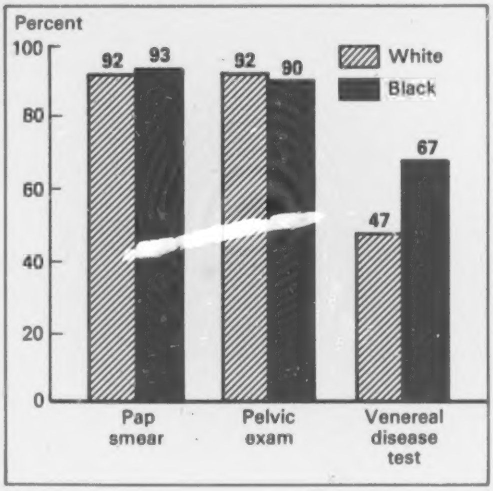
Source: Table 10

that method from a clinic. Slightly more than one-fourth of women currently using these three methods first obtained them from a clinic and, by implication, three-fourths first obained them from private medical services.

Teenage women were much more likely than women age 20 and older to have obtained their current method from a clinic, as were black women compared with white women and never-married women compared with ever-married women. These results are consistent with the patterns of family planning visits shown in Table 9. Fifty-three percent of women aged 15-17 and 44 percent of women aged 15-19 who were using a prescription method of contraception first received that method from a clinic. A similar pattern by age group is found when only women using the pill are considered (Figure 13). It is worth noting that these figures imply that the majority of teenagers and nearly half of those aged 15-17 using prescription methods of contraception first obtained those methods from private medical sources, although Table 9 indicates that teenagers rely on clinics for the majority of their total family planning services.

Medical services. In addition to the counseling and medical tests and services which directly meet their family planning needs, women may also obtain a variety of other medical services at their family planning visits. These services—pap smears, pelvic and breast examinations, blood pressure and venereal disease tests, and urinanalysis—are important screening procedures for

Figure 14. Percent of women who received family planning services in last 12 months who also received selected medical services at that visit (or visits), by race: 1982



maintaining the reproductive health of women. Ninety-seven percent of women who received family planning services in the 12 months before the 1982 NSFG interview also obtained one or more of these other medical services at the same time (data not shown). Although there were some variations by age, marital status, race, ethnic origin, and education, over 80 percent of each group had had a pap smear, pelvic exam, breast exam, blood pressure test, and urinanalysis during a family planning visit made within the preceding year.

However, only 50 percent of women reported that they were tested for venereal disease during such a visit. This percentage varied little except by race (Figure 14). About two-thirds of black women received a venereal disease test compared with less than half of white women. The implications of this difference are not clear. It could be that screening for venereal disease is better for black women or their rates of venereal disease are higher, or both. In any case, further research is needed to explain this difference between black and white women in levels of venereal disease testing.

Infertility

Fertility surveys originally collected data on fecundity impairments and breastfeeding because they affect the likelihood of pregnancy among couples having intercourse. In more developed countries like the U.S., the effect of these variables on fertility trends and differentials is now overshadowed by the effects of contraception. However, in recent years infertility and breastfeeding have also been recognized as important indicators of maternal and child health, and we discuss them here for this reason, and because they are still related to fertility, if only marginally in the U.S.

Table 11 (page 28) shows data on the infertility status of married couples in 1965, 1976, and 1982. Infertility is a medical concept; physicians usually define infertility—among couples who are not surgically sterile—as the inability to conceive after a year of intercourse without contraception. If the woman does not become pregnant in that time, medical tests are recommended to look for and attempt to treat physical or medical problems that either the woman or the man or both may have that could be preventing conception.[30] Many of these are couples who have already had one or more childen together but have trouble conceiving another.

Between 1965 and 1982, the overall proportion of currently married couples (excluding the surgically sterile) who were infertile remained about 14 percent. There was no significant change in any age group except for wives aged 20-24, for whom infertility rose from 3.6 percent in 1965 to 10.6 percent in 1982. There was also an increase in infertility among childless couples from 16 percent in 1965 to 22 percent in 1982, but this was not statistically significant.

The data in Table 11 and Figure 15 show much higher levels of infertility among black than among white married couples in all three survey years—21 compared to 13 percent in 1982, for example. What might explain the increase

Table 11. Infertility Among Married Couples: 1965, 1976, 1982

(Percent of currently married couples with wife aged 15-44 who were infertile, excluding surgically sterile)

Characteristics of wives	Percent infertile		
	1965	1976	1982
Total	13.3	14.3	13.9
15-19	(0.6)	(2.1)	(2.1)
20-24	(3.6)	6.7	10.6
25-29	7.2	10.8	8.7
30-34	14.0	16.1	13.6
35-39	18.4	22.8	24.6
40-44	27.7	31.1	27.2
Number of children			
0	15.6	19.2	21.8
1	18.6	13.6	13.1
2	10.8	8.9	9.3
3 or more	12.0	15.8	(10.3)
White			
Total	12.5	13.2	13.3
15-29	4.7	7.5	8.6
30-44	18.4	20.8	19.3
Black			
Total	19.0	23.1	20.5
15-29	4.8	13.3	13.6
30-44	32.9	34.2	27.6

Infertility = inability to conceive after a year of intercourse without contraception.

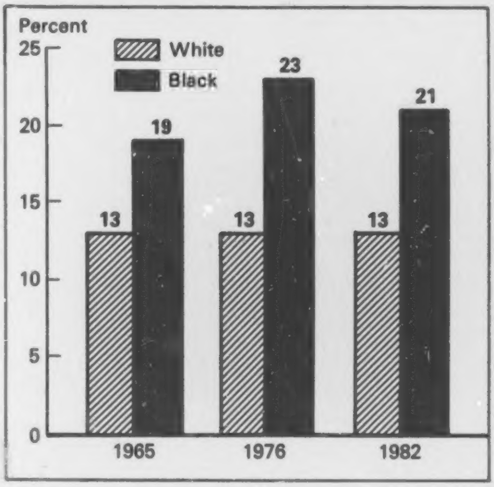
( ) indicates that the statistic has a relative standard error of 0.3 or greater (see box on page 6 for explanation).

in infertility among 20-24 year-old women and the large differences between blacks and whites? Many factors have been suggested, among them the increase in sexually transmitted diseases and the use of IUDs (which can increase women's chances of pelvic inflammatory disease), complications or infections following childbirth or abortion, and environmental factors such as increases in radiation, toxic chemicals, and pollution. Whatever the explanations, they appear to affect black wives and wives aged 20-24 more than others.[31]

Breastfeeding

Data on breastfeeding were originally collected in the NSFG because breastfeeding lengthens a woman's period of natural infertility after a birth and thus can increase the interval before the next pregnancy, even if no contraception is used. In the U.S., this potential effect on fertility levels is now far outweighed by the use of effective contraception, but health professionals have renewed their interest in breastfeeding in recent years. More physicians are recommending breastfeeding because it may have health benefits for the baby—short-term immunity from some diseases, for example, and a nutritional composition that helps prevent both malnutrition and obesity in the baby.[32]

Figure 15. Percent of currently married couples (excluding surgically sterile) who were infertile, by race: 1965, 1976, 1982



Source: Table 11

As seen in Table 12, 24 percent of babies born in the U.S. in 1970-71 were breastfed for at least some time. By 1980-81, the proportion had more than doubled to 53 percent. The trend was not uniform, however; the increase was much greater among white than among black mothers (Figure 16, page 30). By 1980-81, 57 percent of white, but only 25 percent of black babies were breastfed. Similarly, the increase was greatest among mothers with the most education; by 1980-81, 73 percent of mothers with at least one year of college were breast-

Table 12. Breastfeeding: 1970-1981

(Percent of babies breastfed at all and breastfed three months or more, by year of birth, and education, race, and region of mother)

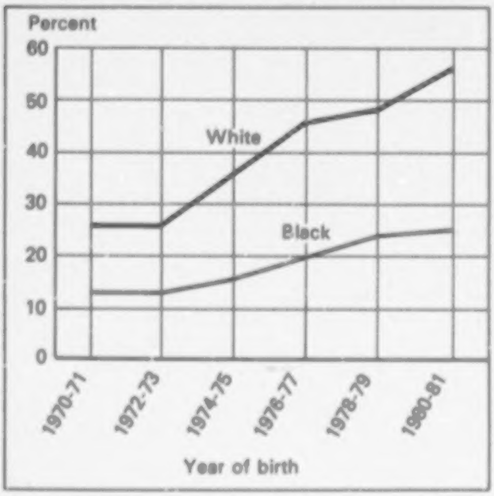
Mothers' characteristics	Birth years of babies 1970-71	1972-73	1974-75	1976-77	1978-79	1980-81
			Percent breastfed at all			
Total	24.3	23.6	32.4	42.2	44.3	52.5
White	25.8	25.6	35.5	46.2	48.1	57.2
Black	12.8	12.9	16.4	19.5	24.4	24.5
Education						
Less than 12 years	17.9	15.5	18.1	25.6	25.3	32.1
12 years	18.5	20.4	31.0	35.3	41.4	44.9
13 years or more	39.9	39.1	50.7	62.3	55.0	73.4
Region						
Northeast	22.5	18.6	30.1	38.5	37.6	46.6
Northcentral	26.4	25.2	30.3	43.6	48.1	54.6
South	17.6	16.2	25.2	32.1	31.8	41.8
West	35.3	43.3	50.5	62.0	66.5	70.1
			Percent breastfed 3 months or more			
Total	10.6	10.8	15.0	25.7	28.5	32.6
White	11.2	11.4	16.6	29.0	31.2	35.8
Black	6.2	6.9	6.4	11.5	14.2	12.1
Education						
Less than 12 years	6.0	6.8	5.6	9.6	15.5	16.4
12 years	7.3	7.2	12.0	20.1	23.1	25.8
13 years or more	20.4	22.1	31.6	43.7	42.5	50.8
Region						
Northeast	11.3	10.3	12.7	23.0	24.6	26.3
Northcentral	12.1	10.1	13.3	24.1	29.4	33.5
South	7.2	7.4	10.0	19.0	19.1	26.2
West	13.6	20.0	29.4	42.3	47.1	46.8

Sources: 1970-75: 1976 NSFG; 1976-1981: 1982 NSFG.

feeding their babies, compared to 32 percent of mothers who did not complete high school. The trend also varied by region, with mothers in the West most likely to breastfeed (70 percent) and those in the South least likely (42 percent).

Breastfeeding is more likely to benefit the infant if it is kept up for more than a few weeks. As an indication of longer-duration breastfeeding, Table 12 also shows the percentage of babies breastfed for three months or more. This proportion increased from 11 percent of babies born in 1970-71 to 33 percent of those born in 1980-81. Again the increase was more rapid for white than for black mothers, so that by 1980-81, white babies were three times more likely than black babies to be breastfed three months or longer (36 percent versus 12 percent). The differences also widened by education to 51 percent of babies born in 1980-81 to mothers with the most education, compared to only 16 percent of babies of mothers with less than 12 years of education. And again, mothers in the West were much more likely than mothers in the other three regions to breastfeed three months or more.

Figure 16. Percent of babies breastfed at all, by year of birth and race: 1970-1981



Source: Table 12

Live Birth and Other Pregnancy Outcomes

Pregnancy outcome variables are the third category of intermediate variables in the Davis-Blake framework. Once a pregnancy has occurred, there are three possible outcomes: (1) spontaneous pregnancy loss (miscarriage or stillbirth), (2) induced abortion, or (3) live birth. In general, national estimates of numbers of live births and of spontaneous pregnancy loss based on data collected in the 1982 NSFG interviews compare well with other data sources, but abortions appear to be substantially underreported. Annual numbers of live births in 1977-1981 estimated from NSFG data collected in 1982 and early 1983 do not differ significantly from the registered numbers for those years, collected and published by the National Center for Health Statistics.[33] NSFG data on outcomes of recent pregnancies indicate that miscarriages or stillbirths occur in about 15 percent of all pregnancies. This can be compared to a recent estimate by demographer Henri Leridon, who reviewed a dozen studies of intrauterine mortality and concluded that the level of miscarriage and stillbirth indicated by other retrospective survey data is also about 15 percent.[34] Thus the 1982 NSFG data on live births and spontaneous pregnancy loss are very good. However, estimates of the number of induced abortions in the U.S. in the five years before the survey based on women's reports in the interview were only about 47 percent of the number reported for 1977-1981 to the Alan Guttmacher Institute by providers of abortion services—public and private hospitals, clinics, and private physicians.

Therefore, in Table 13 on pregnancy outcomes in the five years before interview, NSFG findings have been revised and the basic data are drawn from the most reliable sources: live births from official natality statistics, abortions from the Alan Guttmacher Institute, and miscarriages and stillbirths from the 1982 NSFG interviews. The table shows that among all pregnancies ending in these five years, 61 percent ended in live births, 26 percent in abortion, and 13 percent in miscarriage or stillbirth. Live birth was the outcome with 64 percent of white women's pregnancies and 53 percent of pregnancies among black women

Table 13. Pregnancy Outcomes in the Five Years Before Interview: 1982

	Percent distribution of pregnancy outcomes		
Race	Live birth	Induced abortion	Miscarriage or stillbirth
Total	61.0	25.8	13.2
White	63.5	23.2	13.3
Black and other	52.7	34.5	12.8

Sources: Live births; NCHS, "Advance Report of Final Natality Statistics," *Monthly Vital Statistics Report*, Vol. 32, No. 9 (Supplement), December 1983; Abortions: S.K. Henshaw et al., *Abortion 1977-1979: Need and Services in the United States, Each State and Metropolitan Area* (New York: Alan Guttmacher Institute, 1981), "Abortion Services in the United States, 1979 and 1980," *Family Planning Perspectives*, Vol. 14, No. 1 (January/February 1982) pp. 5-15, and "Abortion Services in the United States: 1981 and 1982," *Family Planning Perspectives*, Vol. 16, No. 3 (May/June 1984) pp. 119-127; Miscarriages and stillbirths: 1982 NSFG.

Table 14. Unwanted and Mistimed Births: 1965, 1973, 1982

(Percent of births to currently married women in the five years before interview that were unwanted or mistimed at conception)

Characteristics of mothers	Percent unwanted			Percent mistimed		
	1965	1973	1982	1965	1973	1982
Total	20.5	13.0	6.8	44.7	23.8	22.5
Age						
15-24	13.1	7.5	(4.3)	44.6	38.0	41.3
25-34	21.1	12.0	5.9	46.4	18.8	17.7
35-44	33.7	34.0	(15.9)	40.0	10.2	(10.0)
White	17.8	11.7	6.1	47.2	23.1	22.1
Black	40.6	26.8	(11.7)	25.8	31.0	27.3
Protestant	22.5	13.6	7.4	43.5	24.3	23.1
Catholic	16.8	11.8	(5.7)	45.4	22.3	20.9
Other or no religion	20.0	3.0	(5.6)	56.2	27.3	(24.3)
In labor force	22.0	13.0	(5.7)	40.9	25.8	20.6
Not in labor force	20.2	13.0	7.4	45.6	23.2	23.7
Education						
Less than 12 years	27.9	18.4	(11.0)	38.2	24.6	23.7
12 years	16.9	12.0	(6.4)	46.8	23.7	22.3
13 years or more	12.4	8.5	(5.2)	54.7	22.9	22.1

Unwanted = not wanted by mother at conception or any future time.
Mistimed = conceived sooner than mother wanted.
( ) indicates that the statistic has a relative standard error of 0.3 or greater (see box on page 6 for explanation).

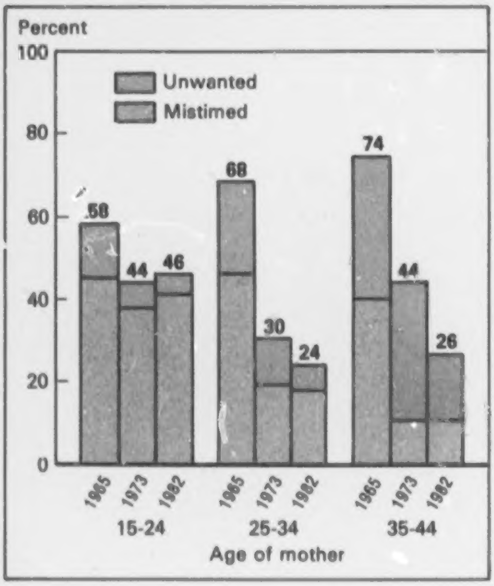
and women of other races. This difference is due to the higher proportion of pregnancies to black and other women that ended in induced abortion—35 percent, compared to 23 percent among white women. (Blacks comprise about 69 percent of the nonwhite population in the U.S.)

Unwanted and mistimed births

Research based on the National Fertility Study and the NSFG of 1973 and 1976 has traced the decline since 1965 in American women's unwanted fertility—births that were not wanted by the mother at the time she became pregnant.[35] Now this can be extended with findings from the 1982 NSFG. As noted in describing Table 1 (page 8), a little less than half of the decline in fertility from 1973 to 1982 was due to the decline in unwanted births. Table 14 shows the percentages of currently married women's live births in the five years before they were interviewed that were reported as unwanted or mistimed, in 1965, 1973, and 1982. The sum of unwanted and mistimed births is referred to as "unplanned." Unplanned births are classified as "mistimed" if they happened sooner than the mother wanted them. "Unwanted" births are those the mother wanted neither at the time they were conceived nor at any future time.

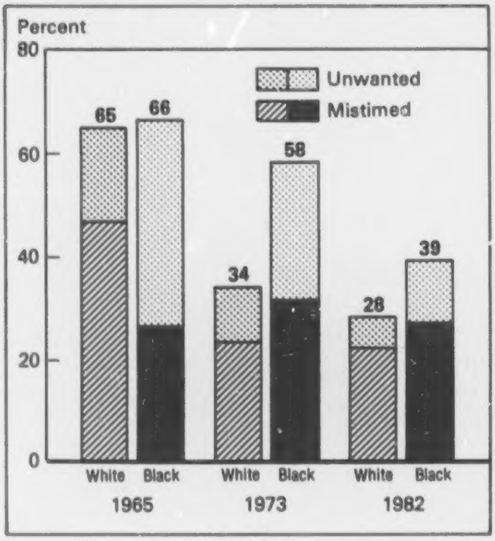
In 1965, about two out of three recent births to married women (65 percent) were unplanned—21 percent unwanted and 45 percent mistimed. By 1973, about one in three recent births (37 percent) were unplanned—13 percent unwanted and 24 percent mistimed. This dramatic reduction in unplanned births probably stems mainly from the major increases in use of the pill and IUD among married women in these eight years (Table 8, page 22). In the next nine years, however, from 1973 to 1982, the proportion of births that were unplanned declined

Figure 17. Percent of births in the five years before interview that were unplanned (unwanted or mistimed), by mother's age: 1965, 1973, 1982



Source: Table 14

Figure 18. Percent of births in the five years before interview that were unplanned (unwanted or mistimed), by race: 1965, 1973, 1982



Source: Table 14

only from 36 to 29 percent, and almost all of this decline was in unwanted births.

The findings by women's ages shown in Table 14 and Figure 17 reveal clues to the causes of the overall decline in unplanned births. Between 1965 and 1973, there was a sharp decline in unwanted births among wives aged 15-24 (13 to 8 percent) and those aged 25-34 (21 to 12 percent), probably because of the large increase in the percentages of young wives using the pill or IUD and the overall increases in the proportion of wives using sterilization and using contraception at all.[36] At the same time, the proportion of recent births that were mistimed also dropped sharply, from 46 to 19 percent for wives aged 25-34 and from 40 to 10 percent at ages 35-44, probably as a result of the dramatic changes in contraceptive practice among couples intending more births: the percent using contraception increased[37] and the percentage of contraceptors in this group using the pill or IUD went up from 40 to 72 percent (Table 8).

Between 1973 and 1982, the most remarkable age shift shown in Table 14 occurred among wives aged 35-44: the proportion of their recent births that were unwanted fell by half, from 34 to 16 percent. This is probably due to the near doubling in these nine years of the proportion of contracepting married couples using sterilization, from 23 percent in 1973 to 41 percent in 1982. Meanwhile, however, the proportion of recent births that were mistimed increased slightly among wives aged 15-24. This increase—from 38 to 41 percent—is probably related to the noticeable drop in pill use between 1973 and 1982 among couples intending to have more children and increased use of the less effective diaphragm and condom (Table 8).

In 1965, the contraceptive practice of black and white women was very different: black wives were almost twice as likely as white wives not to use contraception at all, and four times more likely than white wives to use douching as a contraceptive method.[38] Thus in 1965, 41 percent of recent births to black wives were unwanted, compared to 18 percent for white wives (Figure 18). As both white and black couples adopted more effective methods between 1965 and 1973, the proportion of births that were unwanted fell by one-third both for white (18 to 12 percent) and black (41 to 27 percent) wives. In the next period, from 1973 to 1982, the drop in unwanted births to black wives was especially sharp—from 27 to 12 percent. This probably reflects two changes: the proportion of black wives who were not using any contraception fell by almost half (18 to 10 percent), and the proportion of black contracepting couples using sterilization—almost all female sterilization—increased by more than half (24 to 38 percent).[39]

Protestant women had more unwanted recent births than Catholic women in 1965—23 compared to 17 percent. The percentage of births classified as unwanted or mistimed declined for all three religion groups between 1965 and 1973, and between 1973 and 1982. By 1982, religion differences in the percentage of unwanted and mistimed recent births were no longer significant. In 1973, however, Catholic ever-married women still wanted slightly more children, on average, than Protestant ever-married women (Table 1, page 8).[40]

Proportions of births classified as unwanted or mistimed have declined in tandem for currently married women in the labor force and those who are not. At all three survey dates, the total proportion of unplanned births for women not in the labor force was slightly higher than that of women employed outside the home (31 versus 26 percent in 1982).

In 1965, wives who had not finished high school had a higher proportion of unwanted recent births than those with more education, but the proportion of mistimed births increased with level of education, from 38 percent for women with fewer than 12 years of school to 55 percent for women with at least one year of college. As a result, there was little difference by education in 1965 in the percentage of unplanned births (unwanted plus mistimed). Between 1965 and 1982, differences in unwanted childbearing between the lowest and highest education groups narrowed from 16 to six percentage points. The sharpest reductions in mistimed births occurred between 1965 and 1973, again probably because of increased pill and IUD use. By 1973, and again in 1982, the proportion of recent births that were mistimed was about equal in the three education groups.

Timing of first birth

A first birth arriving while the mother is still a teenager has been shown to have adverse social, economic, and health consequences for both the mother and child and also increases the likelihood that the mother will have more children than a woman who waits longer to begin childbearing.[41] Similarly, couples whose first birth was conceived before they married tend to have persistently lower incomes than couples whose first child was conceived after marriage, and teenagers who have first births conceived premaritally have shorter intervals to the next pregnancy and thus probably more lifetime fertility than other women.[42]

Table 15 (page 34) shows the timing of first births in relation to marriage for all women aged 15-44 in 1982. Forty-two percent had never had a live birth. Of those who had had at least one live birth, 18 percent had their first births before marriage and 15 percent conceived premaritally but married before the first birth. Another 22 percent had their first births eight to 14 months after marriage and the remaining 45 percent, 15 or more months after marriage.

Fifty-nine percent of black mothers, compared to 11 percent of white mothers, had their first birth premaritally (Figure 19, page 34). This striking difference is undoubtedly related to black women's higher rates of premarital intercourse, noted earlier. Premaritally pregnant black women are also less likely

Table 15. Timing of First Birth in Relation to Marriage: 1982

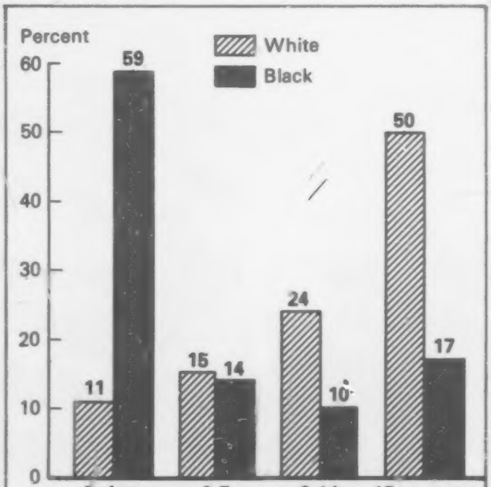
(Women aged 15-44 in 1982, by timing of first birth. Numbers in percent.)

Characteristics	No live births	Timing of first birth in relation to marriage: Women with at least one live birth	Before marriage	0-7 months after	8-14 months after	15 or more months after
Total	42.4	100.0	18.4	14.9	21.8	44.9
White	43.5	100.0	11.4	15.2	23.7	49.7
Black	35.0	100.0	58.9	14.0	9.9	17.2
Hispanic	33.8	100.0	27.7	15.7	27.2	29.4
Non-Hispanic	43.2	100.0	17.4	14.8	21.3	46.5
Protestant[a]	38.9	100.0	9.7	15.5	22.8	52.1
Catholic	48.1	100.0	13.9	15.5	26.6	43.9
Other or no religion	51.7	100.0	14.0	11.5	19.0	55.5
Ever-married	17.9	100.0	11.3	16.2	23.7	48.8
Under 18 at marriage	7.8	100.0	7.0	30.5	27.1	35.4
18-19 at marriage	14.8	100.0	8.3	17.2	25.4	49.1
20 years or over	23.3	100.0	15.1	9.6	21.2	54.1
Never-married	87.1	100.0	100.0	—	—	—

[a] Religion groups include white women only.

than white women to marry before the first birth occurs.[43] Although the proportions of mothers aged 15-44 in 1982 reporting first births within the first seven months of marriage were about even—15 percent for whites and 14 percent for blacks—these percentages represent half of all premarital conceptions ending in first live births for white women but less than one-fifth for black women.

Figure 19. Percent distribution of mothers by timing of first birth in relation to marriage, by race: 1982



Source: Table 15

Smaller, but still marked differences are also apparent by ethnic origin. Hispanic women are more likely than non-Hispanic women to have had a first child before marriage (28 compared to 17 percent), although the proportions having first births within seven months of marriage were similar. At the other end of the spectrum, 47 percent of non-Hispanic mothers delayed their first births to 15 or more months after marriage, compared with only 29 percent of Hispanic mothers.

Differences by religious affiliation are shown for white women only in Table 15, because 86 percent of black women are Protestant and including them with their far higher rate of premarital births would distort the picture. White Catholic mothers were *more* likely than white Protestant mothers to have had a first birth before marriage—14 compared to 10 percent. (When black and other nonwhite women are included, the figures become 20 percent premarital first births for Protestants and 16 percent for Catholic women.) Also, only 44 percent of white Catholic mothers had their first births 15 or more months after marriage, compared with 52 percent of white Protestant mothers.

Thirteen percent of never-married women had had at least one live birth—all of them, of course, premarital. Eleven percent of all ever-married women gave birth to their first child before marriage and 16 percent within the first seven months of marriage, but age at marriage makes a difference. Women married before they were 20 were less likely than women married at 20 and older to have had a birth before marriage. But 31 percent of women married before age 18 and 17 percent of women married at 18 or 19 had a first child within seven months of marriage, compared with 10 percent of women who married later. This suggests that premarital pregnancy was a strong impetus for many teenage marriages. In general, it appears that the earlier women marry, the sooner first births come after marriage.

Summary and Conclusions

This report has discussed a wide range of nationally representative data on trends and group differentials in the fertility, family planning, and reproductive health of American women, based primarily on findings from Cycle III of the National Survey of Family Growth, conducted in the latter half of 1982 and early 1983 by the National Center for Health Statistics. Limited space has prevented comment on many other topics covered by the 1982 survey, such as work before, during, and after pregnancy, child-care arrangements, infant health, use of prenatal care and other health services, sex education from parents and schools, and the effects of premarital pregnancy on the education and living arrangements of the mother. Also, to make this summary report available as soon as possible, we have not done the complex multivariate analyses that are possible with NSFG data. (Examples using data from the two earlier NSFG surveys are included in the Selected Bibliography, page 41.) Rather, we have focused on the main 1982 NSFG findings on fertility and the intermediate variables that affect fertility.

The trends illustrated in this report are closely interrelated. Declines in overall fertility and in unplanned fertility and changes in the timing of births over the past two decades have occurred simultaneously with changes in many of the intermediate variables. These latter changes include the rise of the more effective methods of contraception, especially sterilization and the pill, increases in abortion (documented elsewhere[44]), changes in marital patterns, especially delayed marriage and increased divorce, and increasing premarital intercourse. It is beyond the scope of this report to try to quantify the effects of the intermediate variables on fertility. John Bongaarts has done this with 1973 NSFG data for married women,[45] but it remains to be done for American women of all marital statuses, as is now possible with 1982 NSFG data. Our analysis of the 1982 findings so far appears to confirm Bongaarts' conclusion that contraception is the most important of the intermediate variables in this country; trends in contraceptive practice closely parallel trends in fertility.

Changes in marriage patterns and exposure to sexual intercourse have also had a strong effect on the timing of births in relation to marriage; the number of births that occur outside of marriage has increased steadily since at least 1940.[46] However, the increase in premarital intercourse and postponement of marriage may have offset each other to some extent in affecting fertility levels. Trends in the other intermediate variables, such as infertility and breastfeeding, probably had only minor effects on fertility levels.

Variations in intermediate variables

are also helpful in interpreting group differences in fertility: for example, the higher fertility of black women compared to white women. In 1981, the general fertility rate based on births registered in that year was 85.4 births per 1,000 women aged 15-44 of all marital statuses for black women—34 percent higher than the white rate of 63.9 per 1,000 white women. The 1982 NSFG found that the mean number of children born as of the date of the interview to women of all marital statuses aged 15-44 for black women—1.60 births per woman—was 26 percent higher than the 1.27 average for white women. The 1982 NSFG also found that black women were more than five times more likely than white women to have had a premarital first birth (Table 15) and black wives were more likely than white wives to have unwanted and mistimed births (Table 14). How do NSFG data on the intermediate variables help explain these differences?

Black women have sexual intercourse at earlier ages than white women; by age 17, for example, 55 percent of black women, compared to 40 percent of white women, have had sexual intercourse (Table 2). Only 34 percent of black women aged 15-44 in 1982 reported having used a contraceptive method at first intercourse, compared to 47 percent of white women (Table 6). These two factors tend to *raise* black fertility relative to white fertility.

On the other hand, black women spend less time in marriage during their reproductive years than white women. Twenty-six percent of black women's first marriages are dissolved within five years, compared to 15 percent for white women (Table 4), and only 49 percent of black women aged 15-44 in 1982, versus 67 percent of white women, had ever been married at all (Table 3). These two factors should tend to *reduce* black women's fertility in relation to that of white women. They also affect the timing of their births; in 1981, more than half of all births to black women occurred to unmarried women, as against only one in seven among white women.[47]

Infertility is higher among black than among white women, and this tends to *reduce* black fertility. Twenty-one percent of black couples, compared to 13 percent of white couples, were infertile in 1982 (Table 11).

Black women are less likely to be currently using contraception (51 percent compared to 56 percent of white women in 1982, Table 7), which tends to *increase* their fertility relative to that of white women.

But black women are more likely to end their pregnancies by induced abortion than white women (Table 13, revised data), which tends to *reduce* their fertility vis-à-vis that of white women.

Thus, their earlier intercourse and less frequent use of contraception, both at first intercourse and currently, combine to make the fertility of black women higher than that of white women, even though black women spend fewer of their reproductive years in marriage, are more likely to be infertile, and end more of their pregnancies in abortion than white women. More precise quantitative studies of trends and differences in fertility by race and other characteristics are possible with 1982 NSFG data and we and others will undoubtedly do such research in the future. □

Appendix

Survey design

The National Survey of Family Growth is conducted every few years by the National Center for Health Statistics (NCHS) to collect data on American women's fertility, family planning, and related aspects of maternal and child health. Field work for the first cycle was conducted in 1973 by the National Opinion Research Center under a contract with NCHS. Field work for the second and third cycles was contracted to Westat, Inc., in 1976 and 1982.

The national probability samples selected for personal interviews covered women aged 15-44 living in the conterminous United States, excluding women in institutions. Women living in group quarters, such as college dormitories, were excluded from the samples in Cycles I and II, but included in Cycle III. In Cycles I and II, ever-married women and never-married women who had children living with them were eligible for the survey. In Cycle III, all women aged 15-44 were eligible, regardless of whether or not they had ever been married or had children. Interviews were conducted with 9,797 women in Cycle I, 8,611 in Cycle II, and 7,969 in Cycle III. The sample designs of the three cycles are described in detail in the reports cited in reference 9 (see page 39).

Field work for Cycle III was conducted between August 1982 and February 1983. Black women and women aged 15-19 were sampled at higher rates so that reliable estimates for these groups could be made. Interviews were conducted by trained female interviewers and lasted an average of one hour. The interview focused on a woman's birth and pregnancy history, her use of contraception in each pregnancy interval, her physical ability to bear children, her future childbearing expectations, her use of family planning and infertility services, her marital history, employment history, and a wide range of social, economic, and demographic characteristics.

Reliability of estimates

Since the statistics presented in this report are based on a sample, they may differ from the statistics that would result if all 54 million women represented by the 1982 NSFG had been interviewed. The standard error of an estimate is a measure of such differences. The Appendix Table shows the approximate standard errors for percentages estimated from the NSFG total sample and the sample of white women, along with an example of how this table is used. Equations for calculating standard errors for other groups in the Cycle III sample, such as marital

Appendix Table. Approximate Standard Errors for Percents Estimated from 1982 NSFG Samples Which Include All Women or White Women Only

Number of women in group for which percent is estimated	Percent estimated from sample						
	2 or 98%	5 or 95%	10 or 90%	20 or 80%	30 or 70%	40 or 60%	50%
				One standard error			
100,000	6.4	10.0	13.8	18.4	21.1	22.6	23.0
500,000	2.9	4.5	6.2	8.2	9.4	10.1	10.3
1,000,000	2.0	3.2	4.4	5.8	6.7	7.1	7.3
5,000,000	0.9	1.4	2.0	2.6	3.0	3.2	3.3
10,000,000	0.6	1.0	1.4	1.8	2.1	2.3	2.3
30,000,000	0.4	0.6	0.8	1.1	1.2	1.3	1.3
50,000,000	0.3	0.4	0.6	0.8	0.9	1.0	1.0

Example of use of this table. In Table 3 of this *Bulletin* (page 14), it is shown that there were 10 million women aged 25-29 in 1982 and, of these, the NSFG sample findings indicate that 9.6 percent were remarried. In this standard error table, the juncture between the "10 or 90%" column and the 10 million row indicates that one standard error is 1.4 percentage points, so that two standard errors would be 2.8 percentage points. This means that the chances are about 95 out of 100 that the true percent of remarried women among all women aged 25-29 in 1982 was 9.6 ± 2.8 percent, or between 6.8 and 12.4 percent. This is called a 95 percent confidence interval (further explained in "Reliability of estimates" on this page). The "relative standard error" in the case of this 9.6 percent estimate is 1.4 percent divided by 9.6 percent, or 14.6 percent. (The importance of the relative standard error is explained in the box on page 6.)

status groups and black women, are given in a forthcoming publication of the NCHS (see reference 9).

The chances are about 68 in 100 that a sample estimate would fall within one standard error, and about 95 in 100 that it would fall within two standard errors, of a statistic based on a complete count of the population represented by the NSFG. Differences singled out for discussion in this *Bulletin* were statistically significant at the 95 percent confidence level, using a two-tailed test with 39 degrees of freedom. This means that in repeated samples of the same type and size, a difference as large as the one observed would occur in only 5 percent of samples, if there were in fact no difference between the percents in the population represented by the samples.

As explained at the beginning of this *Bulletin* (box on page 6), all numbers and percents shown and discussed are based on weighted data, that is, the sample data have been multiplied by factors designed to make them estimate national totals.

Statistics in this report may also be subject to nonsampling error, that is, errors or omissions in women's responses to the interview, interviewers' recording of the answers, or in later processing of the data. The data have been adjusted for nonsampling error due to nonresponse (failure to complete an interview with a woman chosen for the sample) by adjusting the sample weights assigned to each case. Other types of nonsampling error were minimized by a series of stringent quality control measures similar to those used in Cycles I and II (see references 28 and 32). These measures included independent editing of completed questionnaires, verification of coding, short "recheck" interviews with a subsample of respondents, an independent recoding of a sample of questionnaires by NCHS, keypunch verification, and extensive computer editing and "cleaning" by both the contractor and NCHS to check for inconsistent or impossible codes.

References

1. Coale, A. and M. Zelnik, *New Estimates of Fertility and Population in the United States* (Princeton, NJ: Princeton University Press, 1963).
2. National Center for Health Statistics (NCHS), *Vital Statistics of the United States 1977*, Vol. 1, *Natality* (Rockville, MD: 1981) Table 1-6.
3. Freedman, R., et al., *Family Planning, Sterility, and Population Growth* (New York: McGraw-Hill, 1959) pp. 6-7.
4. *Ibid;* and P.K. Whelpton, et al., *Fertility and Family Planning in the United States* (Princeton, NJ: Princeton University Press, 1966).
5. Ryder, N.B. and C.F. Westoff, *Reproduction in the United States 1965* (Princeton, NJ: Princeton University Press, 1971); and C.F. Westoff and N.B. Ryder, *The Contraceptive Revolution* (Princeton, NJ: Princeton University Press, 1977).
6. "A Bibliography of Publications Based on the U.S. National Survey of Family Growth," *Population Index*, Vol. 49, No. 1 (Spring 1983) pp. 14-19; and W.D. Mosher, "Fertility and Family Planning in the 1970's: The National Survey of Family Growth," *Family Planning Perspectives*, Vol. 14, No. 6 (November/December 1982) pp. 314-320.

7. Zelnik, M. and J.F. Kantner, "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers: 1971-1979," *Family Planning Perspectives*, Vol. 12, No. 5 (September/October 1980) pp. 230-237.
8. NCHS, *Vital Statistics of the U.S. 1977*, Vol. 1, *Natality*, Table 1-31.
9. French, D.K., *The National Survey of Family Growth, Cycle I: Sample Design, Estimation Procedures, and Variance Estimation*, Vital and Health Statistics, Series 2, No. 76 (Rockville, MD: NCHS, 1978); W. Grady, *The National Survey of Family Growth, Cycle II: Sample Design, Estimation Procedures, and Variance Estimation*, Vital and Health Statistics, Series 2, No. 87 (Hyattsville, MD: NCHS, 1981); and W. Mosher, C. Bachrach, and M. Horn, *The National Survey of Family Growth, Cycle III: Sample Design, Estimation Procedures, and Variance Estimation*, Vital and Health Statistics, Series 2, forthcoming.
10. Davis, K. and J. Blake, "Social Structure and Fertility: An Analytic Framework," *Economic Development and Cultural Change*, Vol. 4, No. 3 (April 1956) pp. 211-235.
11. NCHS, *Vital Statistics of the U.S. 1977*, Vol. 1, *Natality*, Table 1-6.
12. NCHS, "Advance Report of Final Natality Statistics, 1981," *Monthly Vital Statistics Report*, Vol. 32, No. 9 (Supplement), December 1983.
13. Ryder and Westoff, *Reproduction in the U.S. 1965;* Whelpton et al., *Fertility and Family Planning in the U.S.;* and C.F. Westoff, R.G. Potter, and P.C. Sagi, "Some Selected Findings of the Princeton Fertility Study 1963," *Demography*, Vol. 1 (1964) pp. 130-135.
14. Jones, E.F. and C.F. Westoff, "The End of 'Catholic' Fertility," *Demography*, Vol. 16, No. 2 (May 1979) pp. 209-218; and W.D. Mosher and G.E. Hendershot, "Religion and Fertility: A Replication," *Demography*, Vol. 21, No. 2 (May 1984) pp. 185-191.
15. Hendershot, G. and P. Placek (eds.), *Predicting Fertility: Demographic Studies of Birth Expectations* (Lexington, MA: Heath, 1981); and M. O'Connell and C. Rogers, "Assessing Cohort Birth Expectations Data from the Current Population Survey, 1971-1981," *Demography*, Vol. 20, No. 3 (August 1983) pp. 369-384.
16. Zelnik, M., J.F. Kantner, and K. Ford, *Sex and Pregnancy in Adolescence* (Beverly Hills, CA: Sage, 1981); and Zelnik and Kantner, "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers."
17. *Ibid.*
18. Pratt, W.F. and G.E. Hendershot, "Use of Family Planning Services by Sexually Active Teenagers, 1982," paper presented at the Population Association of America annual meeting, Minneapolis, May 3, 1984.
19. Bachrach, C.A., "Contraceptive Practice: 1982," paper presented at the Population Association of America annual meeting, May 3, 1984.
20. NCHS, "Advance Report of Final Natality Statistics, 1981,"; A. Thornton and D. Freedman, "The Changing American Family," *Population Bulletin*, Vol. 38, No. 4 (October 1984) pp. 20-21; and W.R. Grady, "Remarriages of Women 15-44 Years of Age Whose First Marriage Ended in Divorce: United States, 1976," *Advance Data from Vital and Health Statistics*, No. 58 (February 1980).
21. Bureau of the Census, "Marital Status and Living Arrangements: March 1983," *Current Population Reports*, Series P-20, No. 389, June 1983, p. 6.
22. Bachrach, C.A. and M.C. Horn, "Timing of First Sexual Intercourse, Marital Dissolution, and Remarriage: United States, 1982," *Advance Data from Vital and Health Statistics*, forthcoming; and A. Thornton, "Marital Dissolution, Remarriage and Childbearing," *Demography*, Vol. 15, No. 3 (August 1978) pp. 361-380.
23. *Ibid.*
24. NCHS, "Advance Report of Final Marriage Statistics, 1981," *Monthly Vital Statistics Report*, Vol. 32, No. 11 (Supplement), February 1984.
25. NCHS, "Advance Report of Final Divorce Statistics, 1981," *Monthly Vital Statistics Report*, Vol. 32, No. 9 (Supplement), January 1984.
26. Bongaarts, J., "A Framework for Analyzing the Proximate Determinants of Fertility," *Population and Development Review*, Vol. 4, No. 1 (March 1978) pp. 105-132.
27. Bachrach and Horn, "Timing of First Sexual Intercourse, Marital Dissolution, and Remarriage: U.S., 1982."
28. Mosher, W.D. and C.F. Westoff, *Trends in Contraceptive Practice: United States, 1965-1976*, Vital and Health Statistics, Series 23, No. 10 (Hyattsville, MD: NCHS, 1982); and W.D. Mosher

and C. Goldscheider, "Contraceptive Patterns of Religious and Racial Groups in the United States, 1955-1976: Convergence and Distinctiveness," *Studies in Family Planning,* Vol. 15, No. 3 (May/June 1984) pp. 101-111.

29. *Ibid.;* and C. Bachrach and W.D. Mosher, "Use of Contraception in the United States: 1982," *Advance Data from Vital and Health Statistics,* NCHS, forthcoming.
30. Kleinman, R.L. and R. Senanayake (eds.), *Handbook on Infertility* (London: International Planned Parenthood Federation, 1979); R. Ansbacher, et al., "Forum: Management of Infertility," *The Female Patient,* Vol. 4, No. 8 (1979) pp. 26-30; H.A. Zacur and J. Rock, "Diagnosis and Treatment of Infertility," *The Female Patient,* Vol. 8, No. 2 (February 1983); and B.E. Menning, *Infertility* (Englewood Cliffs, NJ: Prentice-Hall, 1977).
31. Mosher, W.D., "Infertility Trends Among U.S. Couples," *Family Planning Perspectives,* Vol. 12, No. 1 (January/February 1982); J. McFalls, "Frustrated Fertility: A Population Paradox," *Population Bulletin,* Vol. 34, No. 2 (May 1979); and W.D. Mosher and W.F. Pratt, *Reproductive Impairments Among Married Couples, United States,* Vital and Health Statistics, Series 23, No. 11 (Hyattsville, MD: NCHS, 1982).
32. Hirschman, C. and G. Hendershot, *Trends in Breast Feeding Among American Mothers,* Vital and Health Statistics, Series 23, No. 3 (Hyattsville, MD: NCHS, 1979) p. 1.
33. NCHS, "Advance Report of Final Natality Statistics, 1981," Table 1.
34. Leridon, H., *Human Fertility: The Basic Components* (Chicago: University of Chicago Press, 1977) Chapter 4.
35. Ryder and Westoff, *Reproduction in the United States 1965;* Westoff and Ryder, *The Contraceptive Revolution;* N.B. Ryder and C.F. Westoff, "Unwanted Fertility in the United States: 1965 and 1970," in C.F. Westoff and R. Parke (eds.), *Demographic and Social Aspects of Population Growth* (Washington, DC: Government Printing Office, 1972) pp. 469-503; and C.F. Westoff, "The Decline in Unwanted Fertility, 1971-1976," *Family Planning Perspectives,* Vol. 13, No. 2 (March/April 1981) pp. 70-72.
36. Mosher and Westoff, *Trends in Contraceptive Practice,* Tables A and 7.
37. *Ibid.,* Table 4.
38. *Ibid.,* Tables 4-9.
39. Bachrach and Mosher, "Use of Contraception in the U.S., 1982," Table 2.
40. Mosher, W.D. and G. Hendershot, "Religious Affiliation and the Fertility of Married Couples," *Journal of Marriage and the Family,* Vol. 46, No. 3 (August 1984) pp. 671-678.
41. Baldwin, W.H., "Adolescent Pregnancy and Childbearing: Growing Concerns for Americans," *Population Bulletin,* Vol. 31, No. 4, updated reprint (January 1980).
42. Coombs, L.C. and R. Freedman, "Premarital Pregnancy, Childspacing, and Later Economic Achievement," *Population Studies,* Vol. 24, No. 3 (November 1970) pp. 389-412; and M. Zelnik, "Second Pregnancies to Premaritally Pregnant Teenagers, 1976 and 1971," *Family Planning Perspectives,* Vol. 12, No. 2 (March/April 1980) pp. 69-76.
43. Pratt and Hendershot, "Use of Family Planning Services by Sexually Active Teenagers, 1982"; and M. Zelnik and J.D. Kantner, "First Pregnancies in Women Aged 15-19: 1976 and 1971," *Family Planning Perspectives,* Vol. 10, No. 1 (January/February 1978).
44. Henshaw, S.K. and K. O'Reilly, "Characteristics of Abortion Patients in the United States: 1979 and 1980," *Family Planning Perspectives,* Vol. 15, No. 1 (January/February 1983) pp. 3-15.
45. Bongaarts, "Analyzing the Proximate Determinants of Fertility."
46. NCHS, *Vital Statistics of the U.S., 1977;* and NCHS, "Final Natality Statistics, 1981."
47. *Ibid.*

Selected Bibliography: National Survey of Family Growth

The authors suggest the following recent articles and reports for those interested in reading more about NSFG findings and in-depth analyses using NSFG data. Monographs on the 1955 and 1960 Growth of American Families surveys and 1965 and 1970 National Fertility Studies are listed at the end.

Bachrach, C.A., "Adoption as a Means of Family Formation: Data from the National Survey of Family Growth," *Journal of Marriage and the Family,* Vol. 45, No. 4 (November 1983) pp. 859-866.

____, "Children in Families: Characteristics of Biological, Step and Adopted Children Living with Women of Childbearing Age," *Journal of Marriage and the Family,* Vol. 45, No. 1 (February 1983) pp. 105-132.

Bumpass, L. and J. Sweet, *Patterns of Employment Before and After Childbirth,* Vital and Health Statistics, Series 23, No. 4 (Hyattsville, MD: National Center for Health Statistics (NCHS), 1979).

Eckhardt, K. and G. Hendershot, "Analysis of the Reversal in Breast Feeding Trends in the Early 1970's," *Public Health Reports,* Vol. 99, No. 4 (1984) pp. 410-416.

Ford, K., *Socioeconomic Differentials and Trends in the Timing of Births,* Vital and Health Statistics, Series 23, No. 6 (Hyattsville, MD: NCHS, 1981).

Grady, W., "Remarriages of Women 15-44 Years of Age Whose First Marriage Ended in Divorce: United States, 1976," *Advance Data,* No. 56 (NCHS: 1980).

____, M. Hirsch, N. Keen, and B. Vaughan, "Contraceptive Failure and Continuation Among Married Women in the United States, 1970-1976," *Studies in Family Planning,* Vol. 14, No. 1 (January 1983) pp. 9-19.

Groat, T., J. Wicks, A. Neal, and G. Hendershot, *Working Women and Childbearing,* Vital and Health Statistics, Series 23, No. 9 (NCHS: 1982).

Hendershot, G., "Family Planning Services from Multiple Provider Types: An Assessment for the United States," *Studies in Family Planning,* Vol. 14, No. 8/9 (August/September 1983) pp. 218-227.

____, "Maternal Age and Overdue Conceptions," *American Journal of Public Health,* Vol. 74, No. 1 (January 1984) pp. 35-38.

____ and P. Placek (eds.), *Predicting Fertility: Demographic Studies of Birth Expectations* (Lexington, MA: Heath, 1981).

Menken, J., et al., "Proportional Hazards Life Table Models: An Illustrative Analysis of Socio-Demographic Influence on Marriage Dissolution in the United States," *Demography,* Vol. 18, No. 2 (May 1981) pp. 181-200.

Mosher, W., "Infertility Trends Among U.S. Couples: 1965-1976," *Family Planning Perspectives,* Vol. 14, No. 1 (January/February 1982) pp. 22-27.

____, "Fertility and Family Planning in the 1970's: The National Survey of Family Growth," *Family Planning Perspectives,* Vol. 14, No. 6 (November/December 1982) pp. 314-320.

____ and C.A. Bachrach, "Childlessness in the United States: Estimates from the National Survey of Family Growth," *Journal of Family Issues,* Vol. 3, No. 4 (December 1982) pp. 517-543.

____ and C. Goldscheider, "Contraceptive Patterns of Religious and Racial Groups: Convergence and Distinctiveness, 1955-1976," *Studies in Family Planning,* Vol. 15, No. 3 (May/June 1984) pp. 101-111.

____ and W. Pratt, *Reproductive Impairments Among Married Couples: United States,* Vital and Health Statistics, Series 23, No. 11 (NCHS: 1982).

____ and C. Westoff, *Trends in Contraceptive Practice: United States,* Vital and Health Statistics, Series 23, No. 11 (NCHS: 1982).

Shirm, A., J. Trussell, J. Menken, and W. Grady, "Contraceptive Failure in the United States: Impact of Social, Economic, and Demographic Factors," *Family Planning Perspectives*, Vol. 14, No. 2 (March/April 1982) pp. 68-80.

Westoff, C.F., "The Decline in Unwanted Fertility, 1971-1976," *Family Planning Perspectives*, Vol. 13, No. 2 (March/April 1981) pp. 70-72.

Previous national fertility surveys

Freedman, R., P.K. Whelpton, and A.A. Campbell, *Family Planning, Sterility and Population Growth* (New York: McGraw-Hill, 1959).

Ryder, N.B. and C.F. Westoff, *Reproduction in the United States 1965* (Princeton, NJ: Princeton University Press, 1971).

Westoff, C.F. and N.B. Ryder, *The Contraceptive Revolution* (Princeton, NJ: Princeton University Press, 1977).

Whelpton, P.K., A.A. Campbell, and J. Patterson, *Fertility and Family Planning in the United States* (Princeton, NJ: Princeton University Press, 1966).

Recent Population Bulletins and Bulletin Slides

Population Bulletin prices, *prepaid*, are:
Single Copy—$4.00
Bulk copies:

2-10	$3.00 each
11-50	$2.50 each
51 or more	$2.00 each

Sets of 35 mm colored slides for figures and tables appearing in each *Bulletin* are available at the **additional** prices shown in parentheses.

Note: *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of Bulletins and slides ordered to cover postage and handling.

Volume 36 (1981-82)

No. 1 *Cuba: The Demography of Revolution,* by Sergio Diaz-Briquets and Lisandro Perez (14 slides, including frontispiece map, $7.00)

No. 2 *U.S. Women at Work,* by Linda J. Waite (13 slides, $6.50)

No. 3 *World Food Resources and Population: The Narrowing Margin,* by Lester R. Brown (16 slides, $8.00)

No. 4 *India's Population: Second and Growing,* by Pravin Visaria and Leela Visaria (19 slides, including map, $9.50)

No. 5 *The Changing U.S. Farmland Scene,* by Michael Brewer (12 slides, $6.00)

No. 6 *Eastern Europe: Pronatalist Policies and Private Behavior,* by Henry P. David (16 slides, including map, $8.00)

Volume 37 (1982)

No. 1 *The World Fertility Survey: Charting Global Childbearing,* by Robert Lightbourne Jr. and Susheela Singh, with Cynthia P. Green (21 slides, including map, $10.50)

No. 2 *U.S. Population: Where We Are; Where We're Going,* by Population Reference Bureau staff and guest experts (27 slides, $13.50)

No. 3 *The Soviet Union: Population Trends and Dilemmas,* by Murray Feshbach (22 slides, including map, $11.00)

No. 4 *Black America in the 1980s,* by John Reid (20 slides, $10.00)

Volume 38 (1983)

No. 1 *Third World Family Planning Programs: Measuring the Costs,* by Nancy Yinger, Richard Osborn, David Salkever, and Ismail Sirageldin (13 slides, $6.50)

No. 2 *China: Demographic Billionaire,* by H. Yuan Tien (17 slides, including map, $8.50)

No. 3 *U.S. Hispanics: Changing the Face of America,* by Cary Davis, Carl Haub, and JoAnne Willette (21 slides, including frontispiece map, $10.50)

No. 4 *The Changing American Family,* by Arland Thornton and Deborah Freedman (12 slides, $6.00)

Volume 39 (1984)

No. 1 *Planet Earth 1984-2034: A Demographic Vision,* by Leon F. Bouvier (9 slides, $4.50)

No. 2 *Israel's Population: The Challenge of Pluralism,* by Dov Friedlander and Calvin Goldscheider (15 slides, including map, $7.50)

No. 3 *The Business of Demographics,* by Cheryl Russell

No. 4 *Delayed Childbearing in the U.S.: Facts and Fictions,* by Wendy H. Baldwin and Christine Winquist Nord (17 slides, $8.50)

No. 5 *Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III,* by William F. Pratt et al. (30 slides, $15.00)

Send orders with checks to: Population Reference Bureau, Inc.
Circulation Department
P.O. Box 35012
Washington, D.C. 20013

Population Reference Bureau, Inc.

The PRB gathers, interprets, and disseminates information on the facts and implications of national and world population trends. Founded in 1929, it is a private, nonprofit educational organization that is supported by grants and contracts, individual and corporate contributions, memberships, and sales of publications. It consults with other groups in the United States and abroad, operates information and library services, and issues the publications described on the outside back cover. The PRB also assists the development of population education through formal and nonformal programs.

Officers

*Mildred Marcy, *Chair of the Board*
*Thomas W. Merrick, *President*
*Raymond H. Potvin, *Secretary of the Board*
*Bert T. Edwards, *Treasurer of the Board*

Trustees

Jodie T. Allen
Brent Ashabranner
*Michael P. Bentzen
*John C. Beyer
Norman E. Borlaug
Wallace Bowman
Michael F. Brewer
John H. Bryant
Marriner C. Eccles, Jr.
Melvyn J. Estrin
Joseph L. Fisher
Frederick G. Harmon
Jonathan Hawley
*Robert Jordan
Laura Olson
Martha Phillips
Jonas Edward Salk
Bennetta B. Washington

Robert P. Worrall, *President Emeritus*
Conrad Taeuber, *Chairman Emeritus and Demographic Consultant*

Advisory Committee

Samuel Baum
Calvin L. Beale
Donald J. Bogue
Lester R. Brown
Philander P. Claxton, Jr.
Caroline S. Cochran
Mercedes B. Concepcion
Douglas Ensminger
Philip M. Hauser
Carl A. Huether
Jose Ruben Jara
Sam Keeny
Richard K. Manoff
M. A. Sattar
Benjamin Viel
Sloan R. Wayland

*Members of the Executive Committee of the Board of Trustees

The Population Reference Bureau is a private, nonprofit educational organization, founded in 1929. PRB members regularly receive the most vital, up-to-date population information available from the authorities who write PRB's four annual POPULATION BULLETINS; from the lively coverage of the latest news and trends in the monthly news magazine POPULATION TODAY; and from the annually updated WORLD POPULATION DATA SHEET and UNITED STATES POPULATION DATA SHEET wall charts. Educator and library members also receive the population education newsletter INTERCHANGE, four times during the school year, accompanied twice a year by ready-to-use classroom materials.

PRB also publishes the POPULATION TRENDS AND PUBLIC POLICY series, POPULATION BULLETIN POLICY SUPPLEMENTS, four-page EXECUTIVE SUMMARIES outlining the policy implications of current U.S. population trends, and special publications such as the POPULATION HANDBOOK, the STATE DEMOGRAPHICS FOR MARKETING DATA SHEET, and the PRB OCCASIONAL SERIES: THE CARIBBEAN and THE MIDDLE EAST. Write for a listing and prices of publications in print.

For more information, PRB's Information Resource Center responds to population-related inquiries by mail, telephone, or in-person visit. PRB's Demographic Information Service Center (DISC) offers personalized, in-depth data and analyses for individual clients seeking professional interpretation of population trends.

Members of the Population Reference Bureau support an organization that is dedicated to the objective analysis and reporting of one of the world's most compelling concerns.

Population Reference Bureau, Inc.
2213 M Street N.W.
Washington, D.C. 20037
(202) 785-4664

2/22/85 R8750-2.30-F
A

Population Bulletin

Sub-Saharan Africa: Population Pressures on Development

By Thomas J. Goliber

A publication of the Population
Reference Bureau, Inc.
Vol. 40, No. 1
February 1985

ISSN 0032-468X

Abstract—The population of sub-Saharan Africa's 42 countries, estimated at 434 million as of mid-1984, is likely to triple to 1.4 billion by 2025. Annual growth is 3.1 percent—up from 2.5 percent in the 1960s—and rising, as birth rates averaging 48 per 1,000 population show no signs of falling, while death rates, though still a high 17 per 1,000 on average, continue to decline. This rapid population growth increasingly constrains government efforts to feed people adequately, preserve the land base essential for future development, catch up with the demand for jobs, education, and health services, and cope with exploding cities. Reducing actual and desired fertility of over six births per woman is hampered by poverty, still low levels of education despite soaring primary school enrollment since independence, women's early marriage and restricted roles, high infant and child mortality, tribal rivalries, insecurity, and scarce health services among the some 80 percent of people in rural areas. Adoption of policies to reduce population growth as an aid to development has been constrained by the perception that pressure for such policies stems from Western aid donors, lack of popular demand for family planning services, Africa's vastness, and concern of the 32 "micro" countries with populations under 10 million to increase domestic markets. But the policy climate is now changing. Though coverage is still limited, particularly in rural areas, 26 countries had government family planning services by 1984 and 13 supported public and/or private services explicitly to reduce fertility. Reducing fertility will take lower infant mortality, more educational and employment opportunities for women, and family planning services specially adapted for Africa to meet the demand that may come first from second and third generation urban dwellers and the daughters of the women who now have access to primary education for the first time.

Editor: Jean van der Tak Graphics: George Hager

The *Population Bulletin* is published four times a year and is distributed along with other publications listed on the back cover to members of the Population Reference Bureau. If you would like to order additional copies of this *Bulletin* or join the PRB if you are not already a member, write the Circulation Department, Population Reference Bureau, Inc., 2213 M Street N.W., Washington, DC 20037; Telephone: (202) 785-4664. Prices for the *Population Bulletin* are: $4.00 per single copy; bulk copies; 2-10, $3.00 each; 11-50, $2.50 each; 51 or more, $2.00 each. *Inside the United States*, add $1.00 for handling. *Outside the United States*, add 25 percent to the cost of *Bulletins* ordered to cover postage and handling. Annual rates for Population Reference Bureau membership *inside the United States* are: individuals, $30; educators, $20; associate educator members, $10; students, $10; libraries, $40; corporations and institutions, $200. *For all other countries*, the rates are: individuals, $37.50; educators, $25; associate educator members, $12.50; students, $12.50; libraries, $50; corporations and institutions, $250.

For information on other *Population Bulletins* and *Bulletin Slides*, see page 46.

The suggested citation, if you quote from this publication, is: Thomas J. Goliber, "Sub-Saharan Africa: Population Pressures on Development," *Population Bulletin*, Vol. 40, No. 1, (Population Reference Bureau, Inc.: Washington, DC, 1985). The figures and tables from this *Population Bulletin* may be freely reproduced, provided credit is given to the Population Reference Bureau and a copy of the publication in which they appear is forwarded to the PRB.

The *Population Bulletin* is indexed in *GEO Abstracts*, *PAIS Bulletin*, *Population Index*, *Social Sciences Index*, and *Social Sciences Citation Index*. It is included in the coverage of *Current Contents/Social and Behavioral Sciences*, Biosciences Information Service of Biological Abstracts and the CICRED/UNFPA *Review of Population Reviews*, and is available on microfilm from University Microfilms International, 300 North Zeeb, Ann Arbor, MI 48106. Selected *Bulletins* are also included in the coverage of and available in microfiche through ERIC Systems.

Sub-Saharan Africa: Population Pressures on Development

By Thomas J. Goliber

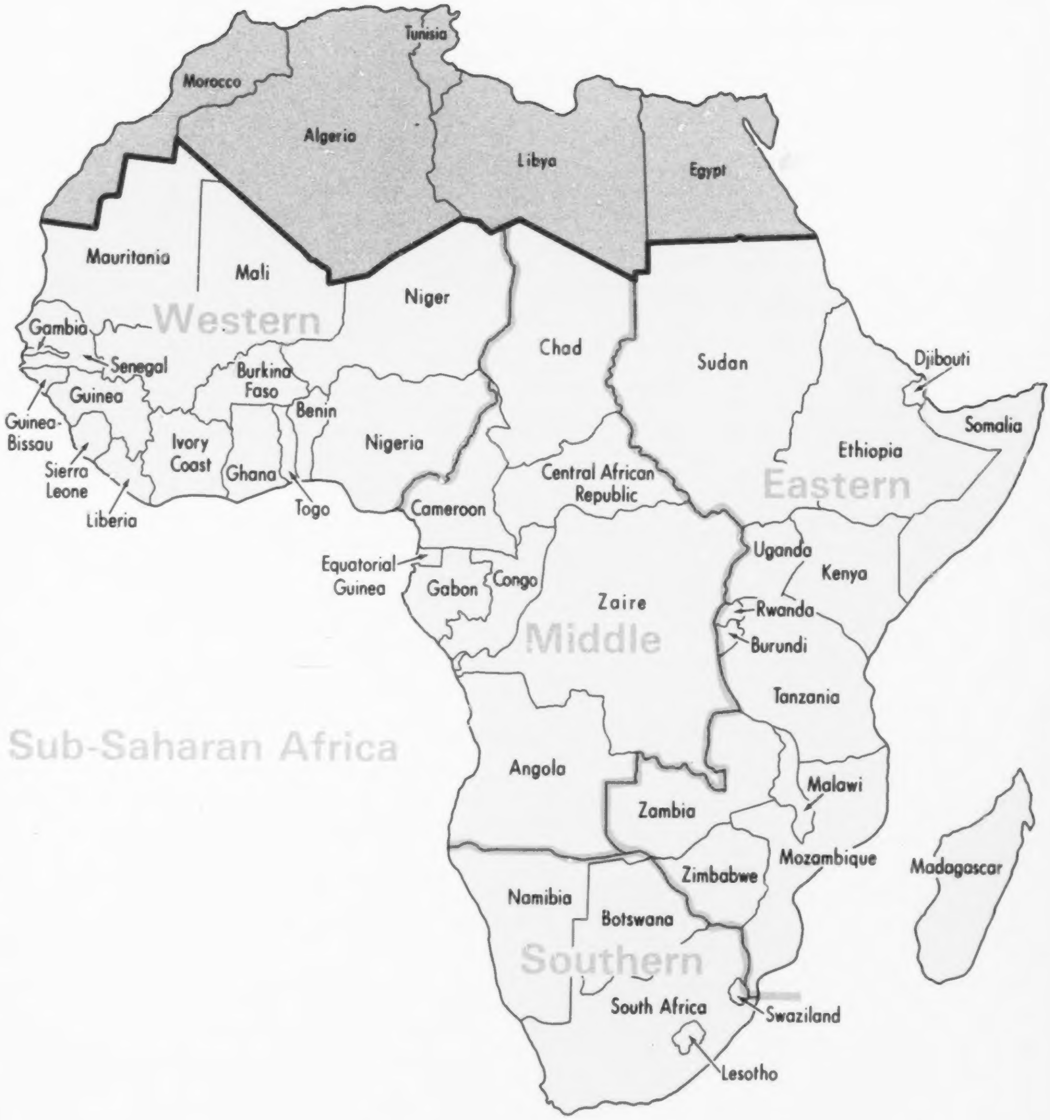
Page
Introduction 3
The Setting 4
Population Characteristics 5
  Population growth: Fertility and mortality 5
  Migration and settlement patterns 8
  Age composition and population momentum 11
Future Populations 13
Population Pressures on Development 15
  Food production and the land base 15
  Labor force and employment 20
  Expansion of education 22
  Life expectancy and health services 25
  Urban growth 27
Determinants of High Fertility 29
Prospects for Fertility Decline 33
Public Ambivalence Toward Population Policy 34
Current Status of Population Policies 37
Policy Options 39
Conclusion 41
References 42
Selected Bibliography 45

Figures
1. Zambia: Population Age Distribution, 1985 12
2. Kenya: Effects of a Delay in Reducing Fertility 13
3. Sub-Saharan Africa Projected Population Growth: 1980-2025 13
4. Projected Racial Composition of South Africa: 1980-2010 15
5. Index of Per Capita Food Production, 1961-65 to 1983: Sub-Saharan Africa, Latin America, and Asia 16
6. Projected Labor Force Size: Sub-Saharan Africa, 1980-2000 21
7. Sub-Saharan Africa Urban Population Growth: 1950-2010 27
8. Kenya: Compounding Population Growth, 1950-2000 36

Tables
1. Sub-Saharan Africa: Population Estimates, mid-1984 6
2. Urbanization in Sub-Saharan Africa: 1960-1982 9
3. Refugees in Sub-Saharan Africa: 1984 Estimates 10
4. Population-Supporting Capacity of Sub-Saharan African Countries with All Cultivable Land Under Food Crops: Food and Agriculture Organization Estimates, 1975, 2000 18
5. School Enrollment: 1960, 1981 23
6. Percentage of 1982 Population in Rural Areas and Percentage of 1980 Labor Force in Agriculture 30
7. Total Fertility Rate, Desired Family Size, Knowledge and Use of Contraception: World Fertility Survey Findings in 10 Sub-Saharan African Countries 33
8. Strength of Family Planning Effort in Sub-Saharan Africa: 1982 39

Photo credits: Adrienne Allison, 5; Thomas Goliber, 11, 35; UNICEF/Werner Gartung, 31; World Bank, 20, 22, 24, 28, 40.

POPULATION BULLETIN
Vol. 40, No. 1, February 1985


Tunisia
Morocco
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Western
Gambia
Senegal
Guinea
Guinea-Bissau
Sierra Leone
Liberia
Ivory Coast
Ghana
Togo
Burkina Faso
Benin
Nigeria
Cameroon
Central African Republic
Djibouti
Somalia
Ethiopia
Eastern
Equatorial Guinea
Gabon
Congo
Zaire
Middle
Uganda
Kenya
Rwanda
Burundi
Tanzania
Sub-Saharan Africa
Angola
Zambia
Malawi
Mozambique
Madagascar
Namibia
Botswana
Zimbabwe
Southern
South Africa
Swaziland
Lesotho

Sub-Saharan Africa: Population Pressures on Development

By **Thomas J. Goliber**

The Futures Group
Washington, DC

Thomas Goliber, who holds the Ph.D. in history from Kent State University, is Senior Research Associate with The Futures Group, a consulting firm based in Glastonbury, Connecticut, and Washington, D.C. Since 1979 he has worked on the Resources for the Awareness of Population Impacts on Development (RAPID) project, a program sponsored by the U.S. Agency for International Development. RAPID has been designed to assist policymakers and researchers in the developing nations as they consider the importance of population factors to social and economic development. In the course of this work, Dr. Goliber has traveled extensively throughout sub-Saharan Africa, working closely with national political leaders and technical experts in the region.

Dr. Goliber previously was on the research staff of the U.S. House of Representatives Select Committee on Population where he served on task forces dealing with global population trends, contraceptive use in the developing nations, and legal and illegal immigration to the United States. He has also worked as a research demographer for the World Bank.

For their help in the preparation of this Bulletin, *Dr. Goliber is grateful to Philander Claxton, Maurice Middleberg, and Alice Weinstein of The Futures Group, Nancy McGirr of the U.S. Census Bureau, and Janice Beattie, Leon Bouvier, Carl Haub, Tom Merrick, and Jean van der Tak of the Population Reference Bureau.*

Africa south of the Sahara, that huge region of vast geographical and cultural diversity, is home to what was estimated for mid-1984 as at least 434 million of the world's inhabitants. Birth rates are collectively the world's highest and, unlike the rates in other developing regions, show no signs of falling. Death rates, however, *are* falling, though still high. As a result, population growth—at over 3 percent a year—is the highest of any region on earth, and rising. The most likely course of events, according to United Nations projections, is that more than a billion persons will be added to the region's population over just the 45 years from 1980 to 2025. For the long term, the World Bank projects that Nigeria's population, for example, already at 92 million in a land area just twice the size of California, could increase sevenfold to 618 million before it stops growing a century or more from now.

Along with this tremendous population growth, recent development trends have been bleak. Public attention in early 1985 was focused on emergency food relief to stem the hunger and famine spreading across the region, largely attributed to four years of drought and crop failure. But the drought is only the triggering event in sub-Saharan Africa's current food crisis.[1] With rapid population growth combined with degradation of arable and pasture land, political upheaval, and governments' failure to give agriculture the support it needs, per capita agricultural production has been falling since the 1960s. Because agriculture is by far the region's largest economic activity, this in turn has contributed to economic decline in an already impoverished region. Gross domestic product, which grew faster than population during the 1970s, has fallen each year since 1980, so that per capita income in 1983 was 4 percent below that of 1970.[2] The issue of population and development in sub-Saharan Africa is one of the great unfolding dramas of our time.

The Setting

The 42 countries of sub-Saharan Africa cover more than 24 million square kilometers (9.4 million square miles), about 20 percent of the world's land surface, on which lived approximately 9 percent of the earth's population as of mid-1984 (see map, page 2, and Table 1, page 6). The total land area is roughly three times that of the United States, while the estimated mid-1984 population of 434 million was not yet twice the 236 million of the U.S. at mid-1984.

The popuation is diverse, with more than 800 ethnic groups speaking a thousand different languages or dialects. To communicate with each other, the different tribal groups must often resort to English in such former British colonies as Nigeria, and French in the 19 former French or Belgian colonies or trust territories.

Diversity is also characteristic of the economic situations of the countries, although these differences are often masked in the inevitable generalizations about the region. The low-income, semiarid nations—Burkina Faso (formerly Upper Volta), Chad, Gambia, Mali, Mauritania, Niger, and Somalia—contain only about 8 percent of the population (see Table 1). Even adding in the populations of the other countries with difficult terrains and few resources—Burundi, Lesotho, Rwanda, and Senegal—raises the proportion only to 13 percent. Some 30 percent of the region's population, with much higher per capita incomes, lives in the oil-exporting nations. These are led by Nigeria and include Angola, Cameroon, Congo, and Gabon. Most of the remaining nations—countries such as Ghana, Sudan, Uganda, Zaire, and Zambia—have a resource base on which to build their development effort, although their actual performances have often been poor and many of them are still among the poorest countries in the world.[3] These remaining countries account for some 60 percent of the regional population.

A dominant political reality of modern Africa is what former President Leopold Seneghor of Senegal terms the "micro-state." Partly a consequence of the marked ethnic and linguistic diversity of the region, partly a consequence of historic migration and wars, and to no small degree a legacy of the European "scramble" for Africa and the colonial era, Africa south of the Sahara is characterized by a number of relatively small countries. Of the 42 nations in the region (including Madagascar but excluding the six smaller island nations—Cape Verde, Comoros, Mauritius, Reunion, Seychelles, Sao Tome and Principe), only seven had 1984 populations greater than 19 million persons, according to United Nations estimates. Nigeria, with an estimated 92 million people in 1984, is the demographic giant of the region. More than one of every five sub-Saharan Africans lives in that West African nation. Even the six other relatively populous nations have much smaller populations than Nigeria, as seen in Table 1. These are Ethiopia, with an estimated population of 35.4 million as of mid-1984,* Zaire (32.1 million), South Africa (31.6 million), Tanzania (21.7 million), Sudan (20.9 million), and Kenya (19.8 million). Three other nations had populations between 10 and 16 million in mid-1984: Ghana in Western Africa and Mozambique and Uganda in Eastern Africa. Fourteen countries had mid-1984 populations between 5 and 10 million; 13 had between 1 and 5 million; and five had populations under a million—Gambia and Guinea-Bissau in Western Africa, Djibouti in Eastern Africa, Equatorial Guinea in Middle Africa, and Swaziland in Southern Africa.

The preponderance of micro-states has helped foster the common misperception of sub-Saharan Africa as the poorest part of the world. The World Bank in its *1984 World Development Report* lists 21 countries of the region among the 34 it then classified as low-income economies—countries with a per capita gross national product (GNP) under $410 in 1982.[4] However, the picture is different if one thinks in terms of population size rather than number of countries. For example, in mid-1984 there were nearly a billion people in the five countries of the Asian subcontinent: Bangladesh, India, Nepal, Pakistan, and Sri Lanka.[5] This was two and a quarter times the 434 million count for the 42 countries of the sub-Saharan Africa. World Bank estimates indicate that per capita GNP for 1983 averaged about $260 in the Asian subcontinent.[6] This compares with an average 1983 per capita GNP of $595 for sub-Saharan Africa as a whole: $582 in Western Africa, $293 in Eastern Africa, $398 in Middle Africa, and $2,271 in Southern Africa (Table 1). Measured by per capita GNP, sub-Saharan Africa is not the poorest part of the world.

---

*Ethiopia's first census, in May 1984, counted 42 million people. The census results were not available at the time the United Nations estimates were made.

Nevertheless, poverty is a major characteristic of the region, and the situation has worsened in recent years. Per capita income grew by just 0.8 percent a year in the 1970s and only reached that level because of high oil prices which fueled the Nigerian economy.[7] Since then, as noted, the region's gross domestic product has fallen each year, while annual population growth averaged 3.1 percent by 1984 (Table 1).

All but Ethiopia and Liberia are new nations recently emerged from colonial rule, but despite considerable progress since independence, the economic and social setting is still largely traditional. Most of the region's population lives in rural areas, eking out a living through subsistence farming and always subject to the vagaries of the unrelenting climate of tropical Africa. Illiteracy is widespread; death and sickness rates are high; women marry early; polygyny is common; families are large.

A large family in Cameroon.

Population Characteristics

Population growth: Fertility and mortality

Tracking demographic trends in sub-Saharan Africa is hampered by a lack of recent and reliable data. Countrywide censuses have now been conducted in all countries except Zaire, but only one in many countries, most recently in Ethiopia, in May 1984.[8] Little is available from censuses taken so far in the 1980s, and in some countries, the results of past censuses have not been published because of political controversy. Thus the size and growth of population for countries like Nigeria and Zaire are difficult to assess with any degree of certainty. The recent World Fertility Survey has greatly improved fertility and mortality data in the region, but this was conducted only in Benin, Cameroon, Ghana, Ivory Coast, Kenya, Lesotho, Mauritania, Nigeria, Senegal, and Sudan.

From the limited data available, the United Nations judges that death rates have declined slowly in recent decades

Table 1. Sub-Saharan Africa: Population Estimates, mid-1984

Country	Population estimate mid-1984 (millions)	Total area (thousand square kilometers)	Persons per sq. kilometer	Birth rate (per 1,000 population)	Death rate (per 1,000 population)	Natural increase (percent annually)	Total fertility rate[a]	Infant mortality rate[b]	Life expectancy at birth (years)	1983 per capita GNP (U.S. $)
Sub-Saharan Africa, total	433.5	24,299	18	48	17	3.1	6.6	112	49	595
Western Africa	162.3	6,139	26	49	18	3.1	6.9	120	47	582
Benin	3.9	113	35	51	22	2.9	7.0	145	43	290
Burkina Faso	6.8	274	25	48	22	2.6	6.5	145	43	180
Gambia	0.6	11	55	48	28	2.0	6.4	189	36	290
Ghana	13.0	239	54	47	14	3.3	6.4	96	53	320
Guinea	5.3	246	22	47	23	2.4	6.2	155	41	300
Guinea-Bissau	0.9	36	25	41	21	2.0	5.4	140	44	780
Ivory Coast	9.5	322	30	46	18	2.8	6.7	119	48	720
Liberia	2.1	111	19	48	17	3.1	6.9	109	50	470
Mali	7.8	1,240	6	50	22	2.8	6.7	145	43	150
Mauritania	1.8	1,031	2	50	20	3.0	6.9	134	45	440
Niger	5.9	1,267	5	51	22	2.9	7.1	137	43	240
Nigeria	92.0	924	100	50	17	3.3	7.1	111	49	760
Senegal	6.4	196	33	48	21	2.7	6.5	138	44	440
Sierra Leone	3.5	72	49	47	29	1.8	6.1	196	35	380
Togo	2.8	57	49	45	16	2.9	6.1	110	49	280
Eastern Africa	174.3	8,857	20	49	17	3.2	6.8	108	49	293
Burundi	4.5	28	161	47	20	2.7	6.4	134	45	240
Djibouti	0.4	22	18	47	21	2.6	—	—	—	—
Ethiopia	35.4	1,222	29	49	21	2.8	6.7	140	44	140
Kenya	19.8	583	34	55	14	4.1	8.1	79	54	340
Madagascar	9.7	587	17	44	16	2.8	6.1	65	50	290
Malawi	6.8	118	58	52	19	3.3	7.0	161	46	210
Mozambique	13.7	802	17	44	16	2.8	6.0	107	50	—
Rwanda	5.9	26	227	51	16	3.5	7.3	107	50	270
Somalia	5.4	638	8	46	21	2.5	6.1	140	44	250
Sudan	20.9	2,506	8	45	17	2.8	6.5	115	48	400
Tanzania	21.7	945	23	50	15	3.5	7.1	96	52	240
Uganda	15.2	236	64	50	14	3.6	6.9	91	53	220
Zambia	6.4	753	8	48	15	3.3	6.8	98	52	580
Zimbabwe	8.5	391	22	47	12	3.5	6.6	67	56	740

Middle Africa	60.7	6,612	9	45	17	2.8	6.0	117	48	398
Angola	8.5	1,247	7	47	22	2.5	6.4	145	43	—
Cameroon	9.5	475	20	43	17	2.6	5.7	114	49	800
Central African Republic	2.5	623	4	45	21	2.4	5.9	140	44	280
Chad	4.9	1,284	4	44	21	2.3	5.9	140	44	80[c]
Congo	1.7	342	5	44	18	2.6	6.0	121	47	1,230
Equatorial Guinea	0.4	28	14	42	21	2.1	5.7	134	45	—
Gabon	1.1	268	4	35	18	1.7	4.8	109	50	4,250
Zaire	32.1	2,345	14	45	15	3.0	6.1	104	51	160
Southern Africa	36.2	2,691	13	40	14	2.6	5.2	91	54	2,271
Botswana	1.0	600	2	50	12	3.8	6.5	77	55	920
Lesotho	1.5	30	50	41	16	2.5	5.8	107	50	470
Namibia	1.5	823	2	45	17	2.8	6.0	112	49	1,760
South Africa	31.6	1,221	26	38	14	2.4	5.0	89	54	2,450
Swaziland	0.6	17	35	47	17	3.0	6.5	126	49	890

Sources: Population estimates: United Nations, Population Division, Estimates and Projections Section, *Demographic Indicators by Countries as Assessed in 1982*, medium variant, New York, December 14, 1983, computer printout; Land area: World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984) Table 1 and p. 276; 1983 per capita GNP: World Bank, *1984 World Bank Atlas* (Washington, DC: 1985).

[a] Total fertility rate = average number of children women would have by age 49 if they bore children at the current age-specific rates of fertility.

[b] Infant mortality rate = deaths under age one per 1,000 live births in the same year. [c] Estimate for 1982.

while birth rates have remained high or even risen in some cases, in part because the health of women (and their partners) has improved. As a result, average annual natural increase—birth rates minus death rates—has mounted each decade. The region's natural increase averaged 2.5 percent a year in the 1960s, 2.7 percent in the 1970s, and now, in the mid-1980s, is 3.1 percent a year—a rate that, if continued, would double the region's population in 22 years. This is in stark contrast to the history of the now developed countries and current trends in other less developed regions. Population growth in Europe at its peak, in the 19th century, never went over 1.6 percent a year.[9] In Asia, natural increase now averages about 1.8 percent a year, or 2.1 percent if China is excluded.[10] In Latin America, the current average is about 2.4 percent a year, although still about 2.8 percent in Mexico and the other nations of Central America.

Women in sub-Saharan Africa give birth more often than women in any other major region of the world. In Western Africa for 1984, the U.N. estimated the birth rate at 49 per 1,000 population and the total fertility rate—a close proxy for the average number of lifetime births per woman at current age-specific fertility rates—at 6.9 per woman. (The highest rates of this period for a comparable subregion outside Africa, those of "Middle South Asia" which includes Bangladesh, India, and Pakistan, were a birth rate of 37 per 1,000 population and a total fertility rate of 5.3 per woman.[11]) All the countries in Western Africa except little Guinea-Bissau have birth rates over 45 and total fertility rates over 6. For the most populous countries in Eastern Africa, the estimated birth rate in 1984 was 49 in Ethiopia, 55 in Kenya, 45 in Sudan, and 50 in Tanzania. Women in Kenya at the current estimated total fertility rate would average 8.1 births apiece over the course of their reproductive years. In Middle Africa, the overall birth rate was 45 and the total fertility rate 6.0 in 1984. Here, geographically gigantic Zaire has a birth rate of 45 and a fertility rate of 6.1. In the southern part of the continent, the estimated rates are lower: a birth rate of 40 and fertility rate of 5.2. This is due to South Africa, which at 32 million in 1984 had more than 20 times the population of the other four Southern African nations. South Africa's birth rate of 38 and total fertility rate of 5.0 ranked second lowest in sub-Saharan Africa in 1984, after those of Gabon.

Researchers point out that fertility is not evenly distributed in the region. There are two belts of especially high fertility. One, in the eastern part of the continent, extends from southeastern Sudan southward into parts of Kenya and Uganda, continues through Rwanda, Burundi and parts of Tanzania, then into regions of Zaire, Zambia, Zimbabwe and Mozambique. The other extends along the coast of Western Africa from the southern part of Nigeria to the Ivory Coast and northward through western Nigeria into areas of Niger and Burkina Faso.[12] Also well known is the band of persistently high subfecundity and infertility running across central Africa, due to high rates of such diseases as genital tuberculosis and especially gonorrhea. From 14 to 32 percent of women are childless at the end of their childbearing years in Cameroon, Central African Republic, Congo, Gabon, Zaire, and Zambia. This depresses average fertility for this region below what it might otherwise be. Population Council demographer Odile Frank estimates that Gabon's current estimated total fertility rate of 4.7 would be three births higher if its high subfecundity were eliminated.[13] Despite this belt of infertility, the outstanding feature of sub-Saharan fertility is its high level almost everywhere.

Current death rates are also among the world's highest and life expectancies at birth consequently among the lowest. Estimated life expectancy at birth in 1984 was 50 years or more in only 14 countries, led by Zimbabwe at 56 years (Table 1). Most life expectancies, like Nigeria's 49 years, are in the 40s, but they range as low as 36 years in Gambia and 35 in Sierra Leone. (In Bangladesh, the current life expectancy estimate is 47 years, in India, 50, and in the U.S., 74.[14]) Of course, what these relatively low life expectancies mean in terms of population growth is that as death rates drop further and life expectancies thus increase, population growth rates will also rise further—if birth rates do not soon decline. Life expectancy for the region has already increased steadily since the 1950s, with the elimination of smallpox, for example, better control of epidemic diseases like yellow fever and malaria, and relief services which, however inadequate, have reduced death tolls from drought and famine below what they might have been. Between 1950 and 1980, according to U.N. estimates, life expectancy rose from 36 to about 48 years in Nigeria, for example, and from 38 to nearly 52 years in Kenya.[15]

By 1984, with universally high birth rates combined with declining death rates, natural increase was up to 3.1 percent a year in Western Africa, 3.2 percent in Eastern Africa, 2.8 percent in Middle Africa, and 2.6 percent in Southern Africa (Table 1). Kenya's growth rate of 4.1 percent was the highest on the continent and probably the highest rate of natural increase in the world. If that rate were to continue, Kenya's population would double in just 17 years.

Migration and settlement patterns

The peoples of Africa have long been migratory. Southern African nations such as Swaziland and Lesotho were founded by migrating Swazis and Basothos fleeing warring Zulu tribesmen. Tanzania was largely settled in the 19th century by Bantu people filtering in from other parts of the continent.

Migration continues in contemporary Africa. The most striking movement is from rural areas into the towns and cities of the continent. Although all African nations except South Africa are still overwhelmingly rural, the increase since

Table 2. Urbanization in Sub-Saharan Africa: 1960-1982

	Urban population			Number of cities over 500,000 persons		Percentage of urban population in largest city
	As percentage of total population		Average annual growth rate (percent)			
Country	1960	1982	1970-1982	1960	1980	1980
Western Africa						
Benin	10	15	4.4	0	1	63
Burkina Faso	5	11	6.0	0	0	41
Ghana	23	37	5.0	0	2	35
Guinea	10	20	5.2	0	1	80
Ivory Coast	19	42	8.2	0	1	34
Liberia	21	34	5.7	0	0	—
Mali	11	19	4.7	0	0	24
Mauritania	3	26	8.1	0	0	39
Niger	6	14	7.2	0	0	31
Nigeria	13	21	4.9	2	9	17
Senegal	23	34	3.7	0	1	65
Sierra Leone	13	23	3.9	0	0	47
Togo	10	21	6.6	0	0	60
Eastern Africa						
Burundi	2	2	2.5	0	0	—
Ethiopia	6	15	5.6	0	1	37
Kenya	7	15	7.3	0	1	57
Madagascar	11	20	5.2	0	1	36
Malawi	4	10	6.4	0	0	19
Mozambique	4	9	8.1	0	1	83
Rwanda	2	5	6.4	0	0	—
Somalia	17	32	5.4	0	0	34
Sudan	10	23	5.8	0	1	31
Tanzania	5	13	8.5	0	1	50
Uganda	5	9	3.4	0	1	52
Zambia	23	45	6.5	0	1	35
Zimbabwe	13	24	6.0	0	1	50
Middle Africa						
Angola	10	22	5.8	0	1	64
Cameroon	14	37	8.0	0	1	21
Central African Republic	23	37	4.5	0	0	36
Chad	7	19	6.4	0	0	39
Congo	30	46	4.4	0	0	56
Zaire	16	38	7.6	1	2	28
Southern Africa						
South Africa	47	50	3.2	4	7	13

Source: World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984) Table 22, p. 260.

1970 in the proportion of their populations residing in urban areas outstrips all but that of Middle Eastern oil-producing countries like Saudi Arabia. Between 1970 and 1982, sub-Saharan African urban populations grew on average by almost 6 percent a year—more than twice the overall rate of population growth (see Table 2). In 1960 about 11 percent of the population of the region lived in urban areas; 22 years later, in 1982, the proportion had nearly doubled to about 21 percent. Only seven cities had more than half a million residents in 1960; by 1980 the figure was up to 35, of which nine were in Nigeria and seven in

South Africa. Metropolitan Lagos, the epitome of rapid urbanization in Africa, grew from just over a million residents in 1963 to an estimated four and a half million in 1980.[16]

Along with rapid growth, the development of primate cities, or single, dominant metropolitan areas, is characteristic of the region's urbanization. In 1980 in Western Africa, 60 percent of Togo's urban population lived in the country's largest city and capital, Lome. In Eastern Africa, 57 percent of Kenya's urban population could be found in Nairobi, 83 percent of Mozambique's in Maputo, 50 percent of Tanzania's in Dar es Salaam, 52 percent of Uganda's in Kampala, and 50 percent of Zimbabwe's in Harare (Table 2).

Africans also migrate across national borders in great numbers on a voluntary basis. As with rural-to-urban migration, the motivation is economic as workers seek better jobs, this time in neighboring countries—in the mines of South Africa, the hotels and factories of Nigeria, on the cocoa farms of the Ivory Coast.

The number of persons involved in these labor movements can be impressive. In 1975, one in every five persons in the Ivory Coast was a foreign national, mostly from Mali and what was then Upper Volta (now Burkina Faso).[17] Upper Voltans in the Ivory Coast in that year added up to 13 percent of the entire population of Upper Volta. Over the past decade, large numbers of West Africans also left home looking for employment in the oil-driven economy of Nigeria. Many were Ghanaians seeking opportunities outside their own economically depressed nation. However in 1983, because of declining world oil prices and its own consequent recession, Nigeria expelled about 2 million illegal workers, about half from Ghana—itself a nation of less than 13 million people—and half from other neighboring West African nations.[18] (Ironically, Ghana, formerly a receiving country for immigrants, had it-

Table 3. Refugees in Sub-Saharan Africa: 1984 Estimates

Host countries	Number of refugees	Source countries
Somalia	700,000	Ethiopia
Sudan	700,000	Ethiopia, Uganda, Zaire, Chad
Zaire	283,500	Angola, Uganda, Burundi, Rwanda, Zambia
Burundi	256,000	Rwanda, Uganda, Zaire
Tanzania	180,000	Burundi, Zaire, Uganda, South Africa
Uganda	173,000	Rwanda, Zaire
Zambia	103,000	Angola, Zaire, Namibia, South Africa, others
Angola	99,000	Namibia, Zaire, South Africa
Zimbabwe	60,000	Mozambique, South Africa
Ethiopia	50,000	Sudan
Rwanda	49,000	Burundi
Djibouti	23,000	Ethiopia
Lesotho	11,500	South Africa
Kenya	7,300	Ethiopia, Rwanda, Uganda
Swaziland	7,000	South Africa
Central African Republic	6,800	Chad
Nigeria	5,000	Chad, Ghana, Namibia
Cameroon	4,300	Chad
Botswana	4,200	Zimbabwe, South Africa
Togo	1,500	Ghana
Total	2,724,100	

Source: Office of the U.N. High Commissioner for Refugees, as presented in "Africa: The Hungry Continent," *The Washington Post*, November 19, 1984, p. A18.

self expelled immigrants twice during the 1960s, including tens of thousands of Nigerians.)

Another large-scale movement across national borders in Africa is involuntary. Uprooted by war, political strife, and drought, multitudes of refugees have been forced to flee their homes. Ethiopia is the single largest source country. By 1984, more than a million refugees from that war-torn and famine-stricken country were living in other parts of the continent, according to U.N. estimates (see Table 3). Countries receiving the most refugees are Somalia, with some 700,000 from Ethiopia, and Sudan, with 700,000 from Ethiopia, Uganda, Zaire and Chad. Overall by 1984, Africa had about 2.7 million refugees counted by the U.N. and undoubtedly hundreds of thousands more that do not show up in official statistics.

The two different settlement patterns of rural peoples are less noted features of the region's population. One is a pattern of central villages in which people live and leave each day to work in surrounding fields. The other is a system of independent "smallholdings" scattered about the countryside, each occupied by a single, sometimes extended, family. This pattern can hinder development efforts because of the difficulty of providing education, health, agricultural and other services to the rural population.

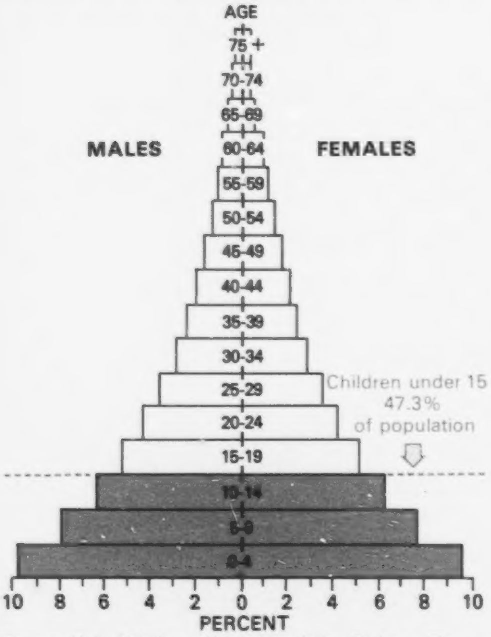
Which pattern predominates depends on the country and the ethnic group. In Burundi and Rwanda in Eastern Africa, the rural population lives on thousands of smallholdings scattered over the "collines" or hills, while in much of Western Africa, rural people typically live in villages. Tanzania is perhaps the best illustration of the importance of this phenomenon to the development effort. Historically, the Bantu peoples who settled the country lived on widely scattered smallholdings. However, after independence in 1961, the government decided it would be impossible to develop a modern state with such a settlement pattern and in the 1970s, adopted a policy of "villagization" to move the population, sometimes forcibly, into larger villages. The demographic results were dramatic. In 1970, less than 5 percent of the mainland population lived in villages and these averaged about 270 persons apiece. By 1978, 90 percent of the rural population lived in villages averaging about 1,850 persons apiece. To date, the policy does appear to have made it easier to provide services to the rural population, although at the same time it seems to have done little to improve agricultural productivity in Tanzania.[19]

A village in Malawi.

Age composition and population momentum

Because birth rates have been so high for so long in sub-Saharan Africa and to a lesser degree because of the decline in mortality, especially infant and child mortality, the populations of the different countries are very young. The U.N. estimates that at least 45 percent of the population is under age 15 in all but Gabon and South Africa. (This compares with 22 percent in the United States.) Typical is Zambia, with an estimated 47 percent of its 1985 population comprised of children under 15 (see Figure 1). In

Figure 1. Zambia: Population Age Distribution, 1985



Source: United Nations (U.N.), Population Division, *Demographic Indicators by Countries as Assessed in 1982*, medium variant, New York, December 14, 1983, computer printout.

Kenya and one or two other countries, more than half the population is under age 15.

This youthful character of the African population is important for many reasons. As many researchers have noted, an exceptionally large share of development resources must go to meet the immediate needs of the young. Education, for example, commands 25 to 35 percent of recurrent government expenditures in many African countries.[20]

Demographically, the large proportion of children means that much momentum for future growth is already built into the population. The numbers of young people entering the childbearing ages are so much larger than the numbers in the older ages where most deaths usually occur that even when (and if) fertility drops to the "replacement" level of a little over two births per woman, births could continue to outstrip deaths and populations continue to grow for at least 50 years until the disproportion in the number of people in the childbearing ages disappears. If replacement level fertility were attained immediately, virtually all the national populations of sub-Saharan Africa would grow by another 80 to 100 percent due to the momentum built into their youthful age structures.

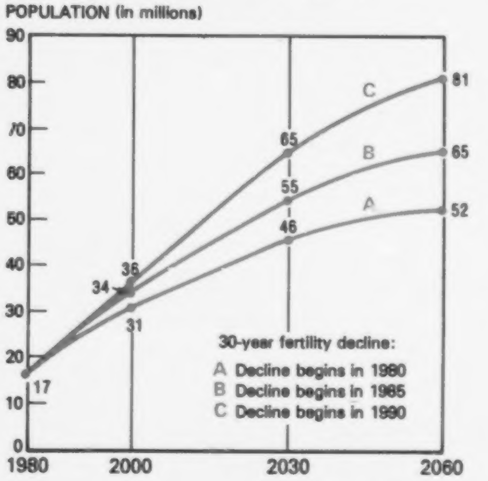
In reality, of course, reduction of present high fertility to replacement level will take many decades. The World Bank has prepared projections which assume probably the earliest points in time when the different African nations could achieve replacement level fertility. Adding on 50 more years of growth to allow for the momentum factor, even these optimistic projections—which assume very rapid fertility decline—show the populations of Kenya and Zaire growing until 2080, Ivory Coast until 2085, and Sierra Leone until 2095.[21] Barring extraordinary catastrophe, population growth will clearly be characteristic of Africa for at least the next century.

The impact of the timing of fertility reduction, coupled with the momentum factor, can be illustrated with the alternate projections for the population of Kenya shown in Figure 2. These projections assume that with a combination of socioeconomic development and familiy planning services, Kenya's total fertility rate drops from the current eight births per woman to the replacement level of slightly over two children per woman over a 30-year period. The difference in each case is the point in time when the 30-year decline begins.

In projection A, the fertility decline is assumed to begin in 1980. Kenya's population would grow from 17 million in 1980 to 31 million in 2000 and 46 million in 2030, and would level off sometime late in the 21st century at approximately 52 million. If the 30-year fertility drop began in 1985 (projection B), the population would reach 34 million in 2000 and 55 million in 2030 and would not stop growing until it reached almost 65 million persons. With the decline beginning in 1990

Figure 2. Kenya: Effects of a Delay in Reducing Fertility

(Fertility decline to slightly over two children per woman in 30 years)



Source: The Futures Group, *Kenya: The Effects of Population Factors on Development* (Washington, DC: 1982).

(projection C), the population grows to 36 million in 2000 and 65 million in 2030 and continues on to 81 million. Thus, a delay of only ten years in the start of the 30-year fertility decline would increase the size of Kenya's ultimately stabilized population by 30 million.

Similar results would be obtained for all sub-Saharan African countries; even relatively modest delays in fertility reduction will greatly increase their future population sizes.

Future Populations

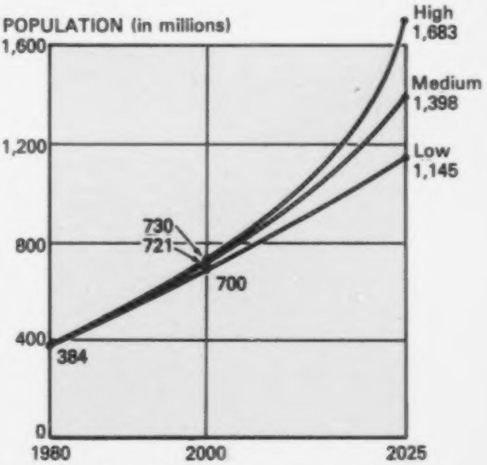
Regional and national populations

What, then, does the demographic future of sub-Saharan Africa look like? Projections prepared in 1982 by the U.N. Population Division indicate that the total population of the 42 nations would grow from 384 million in 1980 to 721 million in 2000 in the "medium" or "surprise-free" projection (see Figure 3). This would be an increase of 88 percent, 337 million people, in only 20 years. The medium projection then shows the regional population growing on to 1.4 billion by 2025. Thus, the most likely demographic future for sub-Saharan Africa, according to the U.N., is that more than a billion persons will be added to the population in the brief 45 years from 1980 to 2025. In this medium version of the U.N. projections (which are done country by country but can be aggregated), the overall total fertility rate for the region is assumed to decline from 6.6 children per woman in 1980 to 6.0 in 2000 and 3.3. in 2025.

In the high projection, which assumes that the total fertility rate declines more slowly to 6.4 in 2000 and 4.6 in 2025, the region's population reaches 730 million in 2000 and 1.6 billion in 2025. The low projection assumes that fertility drops more rapidly to 5.2 children per woman in 2000 and 2.4 in 2025. Even here, 316 million persons are added in the first 20 years to reach 700 million in 2000, and another 445 million in the next 25 years, to reach 1.1 billion in 2025.

Projections for individual countries tell the story even more dramatically. In the

Figure 3. Sub-Saharan Africa Projected Population Growth: 1980-2025



Source: U.N., *Demographic Indicators by Countries as Assessed in 1982.*

medium projections, Kenya's population grows from 16.7 million in 1980 to 38.5 million in 2000 and 82.9 million in 2025. The population of Tanzania increases from 18.9 million in 1980 to 39.1 million in 2000 and 83.8 million in 2025. Nigeria would become even more of a demographic giant as its population grows from an estimated 80.6 million in 1980 to 161.9 million in 2000 and 338.1 million in 2025. Thus in just 45 years, Tanzania's and Nigeria's populations are likely to more than quadruple and Kenya's will nearly quintuple.

Over the long term, the World Bank projects that Kenya's population could grow to 153 million before stabilizing, Tanzania's to 117 million, and Nigeria's to 618 million—over 40 percent larger than the population of the whole of sub-Saharan Africa in 1984.[22] Lester Brown, president of the Worldwatch Institute, terms such projections "unrealistic." Long before such figures are reached, he contends, population-induced environmental degradation would lead to economic decline, social disintegration, and an inevitable rise in death rates. "Although this will lead to a smaller population size, it is presumably not a route to that goal any country would choose to follow," he says.[23]

South Africa: A special case

The Republic of South Africa, notorious for its system of racial separation, apartheid, and thus one of the better known African nations, is often left out of development discussions because its economy is in general the most developed of sub-Saharan Africa. However, its demography is intriguing and an important part of the present story.

Just as the racial question dominates most political discussions of South Africa, so too is it a critical factor in the demographic discussion. South African law recognizes four main racial groups. The largest group are black Africans. "Coloureds" are descendants of racial intermarriage. Asians are descendants of immigrants from the Asian subcontinent, mostly from India, many of whom came as indentured servants to work the sugar plantations. Europeans or whites, the dominant political group, are divided into those descended mostly from British colonizers and the more conservative Afrikaners, the descendants of Calvinist immigrants from the Netherlands, Germany, and France.

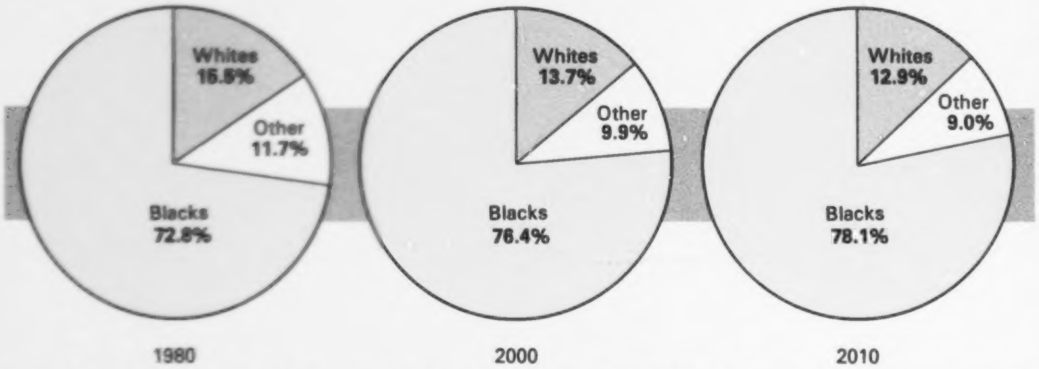
South Africa had an estimated population of 28.7 million in 1980, growing at 2.5 percent a year. This included 20.9 million blacks (73 percent of the population), 4.5 million whites (16 percent), 2.6 million coloureds (9 percent), and 800,000 Asians (3 percent). Black Africans were not only four and half times more numerous than whites but also increasing twice as fast—2.8 versus 1.4 percent a year.

The U.S. Census Bureau has projected that 1.3 million whites will be added to South Africa's population between 1980 and 2000, while black Africans increase by 13.6 million. By 2000, there would be 34.5 million blacks, six times the number of whites. By 2010, the projection is for 42.3 million black Africans as against 6.2 million whites. Blacks would outnumber whites sevenfold by that time and the white community would have shrunk to 13 percent of the total population, down from 16 percent in 1980 (see Figure 4).

Writing for a 1971 symposium, N. J. Van Rensburg and C. J. Jooste noted that whites were becoming a dwindling minority in the country and suggested that the European reaction had been "a dualistic White view which seeks to generate an increased growth of the White population and, at the same time, strives to bring about a drastic reduction in the growth rate of the Non-Whites."[24] They argued that such a policy could never be achieved and that whites would continue to be a declining minority. Their prediction proved to be accurate.

One reason for the recent creation of homelands in South Africa, nominally independent countries on the poorest lands where the majority of black Afri-

Figure 4. Projected Racial Composition of South Africa: 1980-2010



Source: Peter D. Johnson and Paul R. Campbell, *Detailed Statistics on the Population of South Africa by Race and Urban/Rural Residence: 1950 to 2010* (Washington, DC: U.S. Bureau of the Census, 1982) Table 12.

cans are expected to reside and eke out a living, could be the white minority's realization that it must accommodate to the powerful demographic realities of the country. The establishment of the homelands—Bophuthatswana, Transkei, and eventually eight others—is an effort to find a place for the whites of South Africa, not as a small and declining minority, but rather as one nation amid several others of approximately equal-sized populations.

Population Pressures on Development

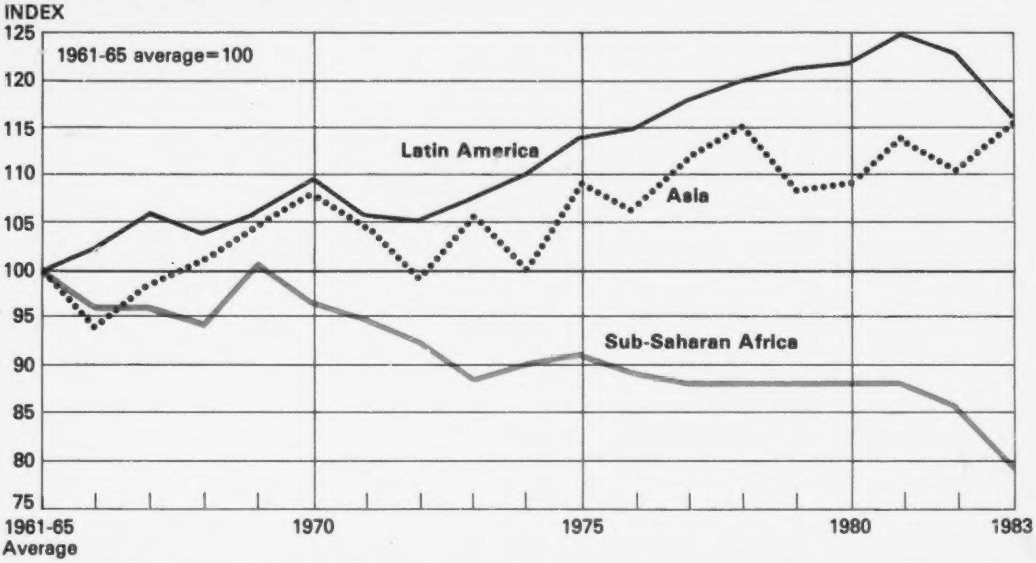
Rapid population growth plays a key role in braking sub-Saharan Africa's social and economic development. Most visibly it constrains efforts to feed people adequately, preserve the land base essential for future development, catch up with the demand for jobs, education and health services, and cope with exploding cities.

Food production and the land base

At the end of 1984, the U.N. Food and Agriculture Organization reported that 19 sub-Saharan African countries, containing 190 million people, were still suffering from what was one of the worst droughts in history and required massive food aid to avert the famine that had already taken the lives of hundreds of thousands of people.[25] Conditions were worst in Chad, Ethiopia, Mali, Mauritania, Mozambique, and Niger. Food supplies were also severely inadequate in Angola, Botswana, Burkina Faso, Burundi, Kenya, Lesotho, Rwanda, Senegal, Somalia, Sudan, Tanzania, Zambia, and Zimbabwe.

This tragic crisis had been brewing for two decades. In the 1960s, agricultural production increased by about 2.3 percent a year in sub-Saharan Africa, roughly equivalent to population growth, so that per capita food production stayed about even. Since then, the region has become the only one in the world where food production is losing the race with population growth, as the rate of food production has slowed and population growth has accelerated (see Figure 5, page 16). During the 1970s, the annual gain in food production fell to about 1.3 percent, less than half the population growth rate of 2.7 percent. Thus the balance between food production and population growth was already negative when the latest drought struck in the early 1980s. Then between 1981 and 1983, per capita food production plunged 14

Figure 5. Index of Per Capita Food Production, 1961-65 to 1983: Sub-Saharan Africa, Latin America, and Asia



Source: World Bank, *Toward Sustained Development in Sub-Saharan Africa* (Washington, DC: 1984) Figure 1.2. Reproduced with permission.

percent.

From near self-sufficiency in food in 1970, sub-Saharan Africa saw the cost of food imports soar sixfold by 1978. By 1984, imports provided one-fifth of the region's cereal requirements.[26] By the early 1980s, estimates of the chronically malnourished proportion of the population ranged as high as 60 percent.[27] Declining per capita food production combined with already chronic malnutrition means that when drought strikes, the result can be severe physical and mental damage, even starvation.

The food crisis in Africa cannot be attributed solely to rapid population growth. Frequently government policies have done more to depress food production than encourage it. Controlled prices and heavy taxation on cash crops—coffee, tea, tobacco and the like—along with mandatory marketing through government-controlled marketing boards, greatly restrict the potential income to farmers from the production of cash and export crops.[28] In 1980 in Ghana, for example, the producer price for rice established by the Rice Mills Unit was about half the value of the crop on the open market. Ghanaian farmers responded to this and other disincentives by first trying to sell outside official channels and later decreasing acreage and refusing to harvest or deliver crops.[29]

Consumer as well as producer prices for basic foods are controlled by the government in most African countries, usually to the benefit of urban consumers and detriment of rural producers. Prices are low for the imported food grains that urban dwellers prefer—rice, wheat and corn—because governments comandeer large quantities at low prices which drives prices down, and frequently use some of the taxes from cash crops for direct subsidies. Also, imports usually come in duty free and often at very favorable exchange rates. All this depresses the demand and prices for locally grown food, such as cassava, corn, sorghum, millet, and other rough grains, and thus reduces farmers' incentives to grow more food.

Political and military conflict disrupts farming. One of the region's worst records for agricultural production in the 1970s was that of Uganda, during the rise and fall of the regime of Idi Amin. Ethiopia's current crisis has been exacerbated by two decades of civil war and the Mengistu government's drive to concentrate farming in demonstrably inefficient state-run farms and cooperatives.[30]

Tradition-bound agricultural practices keep productivity low. A plot of land is cultivated, then left fallow while other plots are cultivated. With their high costs and scarcity, little fertilizer or other scientific inputs are used to raise productivity.[31] The system of shifting cultivation has long been based on an abundance of productive land. But with population pressures, land is now scarcer in some parts of the continent and more marginal, less productive lands are brought into cultivation. Fallow periods have been shortened to one or two years, not enough for recuperation of the land. Productivity is further reduced by erosion in the most intensively cultivated lands which allows topsoil, seeds and water to escape when rains do come. Where unused land exists, capital costs can be prohibitively high for preparing for cultivation what is usually marginal land: dense vegetation must be cleared, wetlands drained or irrigation systems installed, soils protected, and roads and storage and transport systems developed.[32]

Nor has Africa experienced the Green Revolution which has dramatically increased yields in India, Pakistan, Indonesia and the Philippines, with new strains of wheat, rice and corn cultivated with fertilizer, water, chemicals and new farming methods. Africa lacks water and institutional backing and the new varieties of rice and corn are not suitable for its severe climate. Development of new seed strains and cultivation methods for Africa's staple foods—cassava, sorghum, millet, fava beans—is still in the early stages.[33]

All this means that what little gain has taken place in agricultural production over the past 15 years has come mostly from increasing the amount of land under production, while yields per hectare have stagnated or declined.[34]

One key to Africa's ability to feed itself is thus the availability of unused arable land. In the aggregate and by comparison with other parts of the developing world, sub-Saharan Africa is land rich. World Bank economists Rashid Faruqee and Ravi Gulhati estimate that as much as a third of the region's land is potentially cultivable, yet less than 6 percent was in use in the late 1970s.[35] In Asia, by contrast, only about 20 percent of the land area is cultivable and already 16 percent of the total is being planted.

The implication that sub-Saharan Africa has enough land to feed its current population and much more, without imports, is confirmed by the U.N. Food and Agriculture Organization in a recent study, *Land Resources for Populations of the Future*. The FAO weighed actual and projected populations against the potential population-supporting capacities of developing countries, measured by soil and climatic conditions and levels of farming technologies, and assuming that all cultivable land is used for food crops. For sub-Saharan Africa, the report concluded that even using subsistence farming methods (no fertilizers or pesticides, traditional seed varieties and cropping patterns, and no conservation efforts), enough cultivable land exists to feed indefinitely a population 2.8 times that of 1975.

This population, however, would be considerably smaller than the 1.4 billion projected by the U.N. as most likely for sub-Saharan Africa in 2025. Also, the situation reported by FAO is more complex when examined country by country.

Fourteen countries had 1975 populations that were already too large in relation to their cultivable land to achieve and maintain food self-sufficiency, assuming continuation of subsistence farming methods. Ranging from Botswana to Uganda (see Table 4, column 1), these 14 countries account for one-third of sub-Saharan Africa's land area and about one-half of its

Table 4. Population-Supporting Capacity of Sub-Saharan African Countries with All Cultivable Land Under Food Groups: Food and Agriculture Organization Estimates, 1975, 2000

1975 Subsistence level farming			2000 Subsistence level farming		
Unable to support even 1975 population on a sustained basis	Able to support 1-5 times 1975 population	Able to support more than 5 times 1975 population	Unable to support 2000 population on a sustained basis	Able to support 1-5 times 2000 population	Able to support more than 5 times 2000 population
Botswana	Benin	Angola	Benin	Angola	Cameroon
Burundi	Burkina Faso	Cameroon	Botswana	Chad	Central African Republic
Ethiopia	Chad	Central African Republic	Burkina Faso	Gambia	Congo
Kenya	Gambia	Congo	Burundi	Guinea	Equatorial Guinea
Lesotho	Ghana	Equatorial Guinea	Ethiopia	Guinea-Bissau	Gabon
Malawi	Guinea	Gabon	Ghana	Ivory Coast	Zambia
Mauritania	Guinea-Bissau	Ivory Coast	Kenya	Liberia	
Namibia	Mali	Liberia	Lesotho	Madagascar	
Niger	Mozambique	Madagascar	Malawi	Mozambique	
Nigeria	Sierra Leone	Zaire	Mali	Sudan	
Rwanda	Sudan	Zambia	Mauritania	Tanzania	
Senegal	Swaziland		Namibia	Zaire	
Somalia	Tanzania		Niger	Zimbabwe	
Uganda	Togo		Nigeria		
	Zimbabwe		Rwanda		
			Senegal		
			Sierra Leone		
			Somalia		
			Swaziland		
			Togo		
			Uganda		

Source: G. M. Higgins et al., *Potential Population Supporting Capacities of Lands in the Developing World,* Technical Report of project *Land Resources for Populations of the Future,* by U.N. Food and Agriculture Organization, U.N. Fund for Population Activities, and International Institute for Applied Systems Analysis (Rome: Food and Agriculture Organization, 1982) pp. 31, 137; World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984) pp. 164-165.

population. Seven of these countries— Burundi, Kenya, Lesotho, Mauritania, Niger, Rwanda, and Somalia— could not achieve food self-sufficiency by 2000 with the continued rapid growth of their populations, even if farming methods were to advance to the "intermediate" levels now found on commercial farms in Asia and Latin America (use of fertilizers and pesticides, some improved seed varieties, and simple conservation methods).

On the other hand, 11 countries still have much underused land and could support populations at least five times their 1975 size, even at subsistence farming levels. Most of these are in central Africa. They range from Angola to Zambia (Table 4, column 3). Among them, according to the FAO report, Central African Republic and the Congo have enough cultivable land to support populations more than 20 times larger than they had in 1975 (2.1 and 1.3 million, respectively). Gabon, blessed with oil as well as land, could support a population 80 times its 1975 size (1 million).

Although the FAO study must be viewed with caution and is admittedly no substitute for evaluations by the countries themselves, nonetheless it is useful in illustrating the maldistribution of land resources among the nations of sub-Saharan Africa and the pressure that population growth is already putting on food self-sufficiency in some countries. Those countries that cannot feed their populations must somehow generate enough foreign exchange to pay for food

2000 Intermediate level farming		
Unable to support 2000 population on a sustained basis	Able to support 1-5 times 2000 population	Able to support more than 5 times 2000 population
Burundi	Benin	Angola
Kenya	Botswana	Cameroon
Lesotho	Burkina Faso	Central African Republic
Mauritania	Ethiopia	Chad
Niger	Gambia	Congo
Rwanda	Ghana	Equatorial Guinea
Somalia	Malawi	Gabon
	Mali	Guinea
	Namibia	Guinea-Bissau
	Nigeria	Ivory Coast
	Senegal	Liberia
	Sierra Leone	Madagascar
	Swaziland	Mozambique
	Tanzania	Sudan
	Togo	Zaire
	Uganda	Zambia
		Zimbabwe

Note: Subsistence level farming = no fertilizers or pesticides; traditional seed varieties and cropping patterns; no conservation efforts.
Intermediate level farming = use of fertilizers and pesticides; some improved seed varieties; simple conservation methods.

imports or face continuing reliance on food aid and, probably, still higher levels of malnutrition.

The FAO report also does not fully reflect the threat to sub-Saharan Africa's food-production capacity posed by population-induced deforestation and desertification of land already in use.

Deforestation. Ninety percent of sub-Saharan Africans still depend on wood as their chief source of energy. But forests are being depleted at a disturbing rate due to uncontrolled cutting—some to meet the demand for export of hardwoods but most for wood to be used for household fuel—and encroachment of farm settlements onto forest land. Some experts put deforestation at 50 acres a minute, and already 18 sub-Saharan African countries are facing acute shortages of firewood.[36] Deforestation in farming areas is especially harmful because it results in deterioration of the soil, both because the soil is exposed to erosion and because crop and animal wastes formerly used as fertilizers are burned for fuel in place of wood. Soil deterioration and the increased time it takes to find fuelwood reduce food production and, along with shorter cooking times (to conserve fuel), contribute to poorer nutrition.

Except in a few countries with large rain forests, like Zaire, accelerated deforestation and fuelwood crises are likely throughout the region in the coming decades. The World Bank projects that annual fuelwood consumption will rise by 3 percent a year to the year 2000.[37] Even taking into account potential substitution of other sources of energy, about 19 million hectares of fuelwood forests would need to be planted by 2000 to meet this increased demand without depleting existing forests. In 1980, only some 200,000 hectares of fuelwood forest had actually been planted.

Desertification. Deforestation—which allows wind to strip the land bare of topsoil—is one of the factors in the relentless desertification taking place in Africa, especially in the Sahel region bordering the Sahara Desert. But overgrazing is also important in this loss of at least marginally useful land to permanent desert. Spurred by the growth of the human populace and their needs, the livestock population is also expanding rapidly. Because grazing lands tend to be communal, African herders and farmers have little immediate incentive to limit the size of their herds and the results are overgrazing and degradation of the land. The U.N. Environment Program estimates that overgrazing, along with deforestation and poor farming practices, is turning 24,000 square miles of African land into desert each year.[38]

Deforestation and desertification are contributing to destruction of the land resources on which much of sub-Saharan Africa's future development depends. Easing population growth would clearly lessen the pressures here. It would also make it

Overgrazing, along with deforestation and poor farming practices, is turning 24,000 square miles of African land into desert each year.

easier to achieve the reforms needed to increase agricultural production, both to feed people and to increase the export earnings needed to finance social and economic development. These include better use of modern scientific inputs to improve yields, improvement of transport and storage facilities and agricultural extension services, adoption of policies to increase farmers' incentives to produce more food, and reforestation, farmland-terracing, and building of water reservoirs to restore degraded land, as well as development of new lands for cultivation.

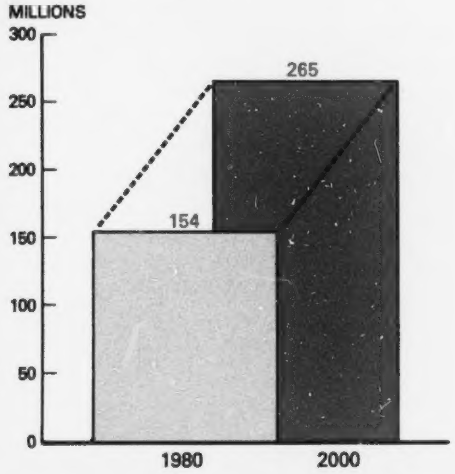
Labor force and employment

While the imbalance between food supplies and total population receives most attention, the growing gap between jobs and workers is perhaps even more fundamental to the development of Africa. Putting together International Labour Organization projections of labor force participation and U.N. medium population projections indicates that the labor force of the 42 sub-Saharan African countries will grow from 154 million in 1980 to 265 million in 2000, an increase of 111 million workers in just 20 years (see Figure 6). (The labor force includes all men and women aged 15-64 who are working or looking for work. "Labor force participation" is a developed country concept difficult to apply to the rural economies of sub-Saharan Africa. However, projections illustrate the tremendous future demand for new jobs.) For Ghana, the projection shows an increase from 4.2 to 7.8 million workers over the 20-year period and for the Ivory Coast it is from 4.1 to 7.1 million. These increases are coming at a time when the region's economies have not been growing and are not projected to grow at rapid rates. Also important to keep in mind is that most new entrants into the labor force between 1980 and 2000 are children who have already been born, so these projections can be little affected by fertility decline in the next decade and a half.

Adding large numbers of workers to the labor force in a short period of time is not necessarily undesirable. An oft-repeated response to advocates of reduced population growth in Africa is that a child is born not only with a mouth to feed but also with two hands with which to work. As Faruqee and Gulhati note: ". . . a larger labor force can be an asset if it is well educated and trained, if it is healthy, and if it can be fully equipped with capital equipment and infrastructure."[39] However, these conditions do not exist in Africa. Capital equipment and infrastructure are obviously in short supply and workers are mostly poorly educated and trained and often in poor health.

There is already much surplus labor in both rural and urban areas, as indicated by widespread underemployment, if not so much full-time unemployment. In rural areas, subsistence farming in particular usually requires less than a full week or year of work. In Eastern African countries like Burundi and Kenya, about 30 percent of rural workers are underemployed.[40] The Economic Commission for Africa estimated in 1983 that 40 percent of sub-

Figure 6. Projected Labor Force Size: Sub-Saharan Africa, 1980-2000



Source: U.N., *Demographic Indicators by Countries as Assessed in 1982*, medium variant; International Labour Organization, *Labour Force: Estimates, 1950-1970; Projections, 1975-2000*, Vol. 2, *Africa* (Geneva: 1977).

Saharan Africa's entire labor force, about 64 million workers, is affected by rural underemployment.[41] If present population projections are borne out, the ECA projects that underemployment will increase to 71 percent of the rural labor force, or 203 million workers, by 2008. In urban areas, underemployment takes another form: workers in poorly paid jobs for which they are overqualified. In particular, huge numbers of urban workers are forced to make their own jobs in the "informal" sector—hawking small retail items on the street, running errands, shining shoes, etc.

In some cases, there are clearly shortages of skilled and seasonal workers. In the Ivory Coast and other parts of Western Africa, farm workers can be in short supply at peak times of the year. In the Sudan, skilled workers leave for higher-paying jobs in the oil-rich Arab states. But these situations do not call for rapid expansion of the labor force. As Kenya-based demographer Roushdi Henin observes: ". . . in the long run, the future . . . depends not on the marginal skills of large numbers, but on the highly trained skills of smaller numbers."[42]

The relationship between education and employment, however, aggravates the situation. The demand for education is enormous throughout sub-Saharan Africa because education is seen as the path to a better job. During the colonial era this was true: those fortunate enough to receive a primary school education, in missionary or other schools, could count on jobs as clerks or assistants in businesses or government. The tradition became engrained that primary school "leavers" (graduates) had access, even a right, to jobs in the modern sector of the economy.

Now this is impossible as independent African nations strive to achieve universal primary school enrollment. In Kenya in 1975, the National Committee on Educational Objectives and Policies was told that while the economy was creating about 40,000 new jobs a year in the modern sector, the school system was turning out 200,000 primary school leavers each year to compete for those jobs.[43] The situation has worsened since then with the slowdown in economic growth. During the 1980s, Kenya will have 450,000 to 500,000 primary school leavers a year, while new jobs in the modern sector—even if these increase by an unprecedented 5 percent a year—will amount to no more than 70,000 a year.[44]

In Zimbabwe, the Ministry of Labour, Manpower Planning and Social Welfare reported that there were over 80,000 primary school leavers in 1982, but only 10,500 new jobs available in the modern sector.[45] Zimbabwe can expect this gap to widen over the next few years as the large numbers of students who flooded into schools when educational opportunities were expanded after independence in 1980 begin to graduate.

The discrepancy between the supply and the demand for jobs requiring some education has not discouraged Africans' thirst for education. On the contrary, the

Workers unload grain in Mali. Sub-Saharan Africa already has much surplus labor and yet would-be workers are projected to increase by 111 million between 1980 and 2000.

demand for education appears to increase as employment prospects worsen. Education is seen as the escape from the tedium and poverty of traditional rural life to the richer world associated with the modern economy. Obtaining a modern job is not assured, but the rewards are large for those who do. Those who fail are forced into informal jobs in the cities or back into traditional jobs in the countryside with their low productivity and subsistence level wages.

It is the agricultural sector, and largely the smallholding units within that sector, that will have to absorb most of the tens of millions of new African workers between 1980 and 2000 and thereafter. Unlike the past, most of these new workers will have at least some education and will aspire to participate in the modern world. This means that the tremendous labor force growth spurred by population growth is not only an economic issue but also can be expected to escalate social and political demands.

In most parts of the world, women who hold a paid job outside the home have fewer children than those who do not. African urban women are beginning to participate in the formal job market but research suggests that so far this is having little effect in reducing fertility, according to Nigerian demographers Akin Mabogunje and Oladele Arowolo.[43] With an abundant supply of relatives, plus houseboys, maids, and gardeners from the vast pool of unskilled labor, to help with child care and housework, such women are able to have large families without sacrificing their employment. Children can also easily be accommodated to informal jobs in the cities. Even in teeming Lagos, women can be seen peddling packets of chewing gum or cigarettes along the sidewalks while broods of small children play behind them. At least initially, African women seem to be finding ways to adapt rural patterns of high fertility into urban life. The recently completed Nigerian Fertility Survey, for example, found a fertility rate in urban areas (6.1 children per woman) scarcely lower than the rate in rural areas (6.4).[47]

Expansion of education

African governments generally share the popular enthusiasm for education, recognizing that social and economic development requires not only capital investment but also the improvement of human resources. Education, especially universal primary school education, is seen as necessary to develop a labor force equipped with literacy, numeracy, and other basic skills. The donor community agrees. The World Bank's 1981 *Agenda for Action* for accelerated development in sub-Saharan Africa states: "Faster economic growth in Africa requires accelerated development of human resources. . . . There is agreement among African and other experts that schooling systems must be expanded and improved, especially at the primary level."[48]

African governments have made strong commitments to education since independence. In about two-thirds of the countries, at least 16 percent of total

Table 5. School Enrollment: 1960, 1981

Country	Primary school enrollments as percentage of group aged 6-11		Primary-school-aged children enrolled as percentage of age group (Net enrollment)	Secondary school enrollments as percentage of group aged 12-17		Higher education enrollments as percentage of population aged 20-24	
	1960	1981[a]	1981[a]	1960	1981[a]	1960	1981[a]
Western Africa							
Benin	27	65	—	2	18	—	1
Burkina Faso	8	20	17	1	3	—	(.)
Ghana	38	69	—	5	36	(.)	1
Guinea	30	33	—	2	16	—	5
Ivory Coast	46	76	—	2	17	(.)	3
Liberia	31	66	—	2	20	(.)	2
Mali	10	27	—	1	9	—	1
Mauritania	8	33	—	—	10	—	—
Niger	5	23	—	—	6	—	(.)
Nigeria	36	98	—	4	16	(.)	3
Senegal	27	48	39	3	12	1	3
Sierra Leone	23	39	—	2	12	(.)	1
Togo	44	111	74	2	31	—	2
Eastern Africa							
Burundi	18	32	18	1	3	(.)	1
Ethiopia	7	46	—	—	12	(.)	1
Kenya	47	109	66	2	19	(.)	1
Madagascar	52	100	—	4	14	(.)	3
Malawi	—	62	43	1	4	—	(.)
Mozambique	48	90	32	2	6	—	(.)
Rwanda	49	72	68	2	2	—	(.)
Somalia	9	30	22	1	11	(.)	1
Sudan	25	52	—	3	18	(.)	2
Tanzania	25	102	72	2	3	—	(.)
Uganda	49	54	—	3	5	(.)	1
Zambia	42	96	82	2	16	—	2
Zimbabwe	96	126	100	6	15	(.)	(.)
Middle Africa							
Angola	21	—	—	2	—	(.)	(.)
Cameroon	65	107	75	2	19	—	2
Central African Republic	32	68	54	1	13	—	1
Chad	17	35	25	—	3	—	(.)
Congo	78	156	—	4	69	1	6
Zaire	60	90	—	3	23	(.)	1
Southern Africa							
Lesotho	83	104	67	3	17	(.)	2

Sources: World Bank, *World Development Report 1984*, Table 25, p. 266; Net primary school enrollment: U.N. Educational, Scientific, and Cultural Organization (UNESCO), *Statistical Yearbook 1983* (Paris: 1983) Table 3.2.

[a] 1981 or latest year available. — = not available. (.) = percentage is 0.5 or less.

government expenditure goes to education, more than any other developmental sector. For many countries, recurrent expenditures on education add up to between 25 and 35 percent of all recurrent expenditures.[49]

Primary school enrollments have increased impressively as a result. Between 1960 and 1981, the number of students enrolled as a percentage of the primary-school-aged group went from 8 to 20 percent in Burkina Faso, 38 to 69 percent in Ghana, 46 to 76 percent in the Ivory Coast, 9 to 30 percent in Somalia, and 25 to 102 percent in Tanzania (see Table 5, page 23). These figures are gross enrollments, however, which include many boys and girls over the usual primary school ages of 6-11. Available data indicate that as of 1981, only Zimbabwe, which became independent in 1980, could claim 100 percent enrollment of children of actual primary school age, although the target was within sight for Togo, Tanzania, Zambia, and Cameroon, with three-quarters or more of their children of primary school age in school (Table 5, column showing "net enrollment").

This educational progress since independence seems to be faltering in the 1980s as government funds shrink and education must compete with other investments that may appear more immediately productive.[50] Further, universal primary school enrollment is bound to become more elusive as the numbers of primary-school-aged children escalate in the coming decades. The U.N. medium projections for the region show the number of children aged 6-11 increasing from 64 million in 1980 to 125 million in 2000 and 168 million in 2010. Despite the impressive increase since 1960 in the *proportion* of children enrolled, the estimated *number* of primary-school-aged children not in school in 1980, 29 million, was a million more than in 1960.[51]

Secondary school enrollments have also increased markedly but still in 1981, amounted to only 17 percent of the group aged 12-17 in the Ivory Coast, for example, 16 percent in Nigeria, 12 percent in Ethiopia, and 3 percent in Tanzania (Table 5). Needless to say, university education is reserved for an even more privileged elite. Besides shortages of qualified teachers and facilities, higher education enrollments are kept low because suitable jobs for these graduates in present-day sub-Saharan African economies are even scarcer than for primary school leavers.

A schoolboy in Burkina Faso. Primary school enrollments have soared since independence, but may now slow as government funds shrink and numbers of schoolage children escalate.

Although African girls are still generally much less likely than boys to have access to schooling, their enrollment rates have also soared since independence. Between 1960 and 1981, the number of girls enrolled in primary school as a percentage of girls aged 6-11 (gross enrollment) rose from 5 to 15 percent in Burkina Faso, 25 to 60 percent in Ghana, 24 to 60 percent in the Ivory Coast, 5 to 21 percent in Somalia, and 18 to 98 percent in Tanzania.[52] Does women's higher educational attainment mean lower fertility rates—an association historically true in other parts of the world? So far, the answer for sub-Saharan Africa seems to be no. This is because girls still tend to drop out after only two or three years of school and recent fertility surveys in Kenya, Nigeria and other countries of the region consistently show that women with a little education (one-four years) actually have more children than women with no education. With a few years of primary school, women tend to have better health practices, enter into more stable marital unions, ignore traditional taboos against sexual intercourse for long periods after childbirth, and reduce the time infants are breastfed, all of which contribute to higher fertility. At the same time, in the poor economic and social settings of rural Africa, completion of a few years of school does little to reduce the desire of women for large families.[53] For the most part, only women with some secondary education begin to adopt contraception and reduce family size. To date, few women in sub-Saharan Africa proceed that far in the education cycle. In 1981, the numbers of girls enrolled in secondary school as a percentage of those aged 12-17 was only 3 percent in Burkina Faso and Tanzania, 36 percent in Ghana, 17 percent in the Ivory Coast, and 11 percent in Somalia.[54] Thus the expansion in girls' education that has taken place so far has not been enough to translate into lower national fertility rates and, in fact, has probably helped to increase them.

Australian demographer John Caldwell, an expert in sub-Saharan African demography, argues that observers are looking at the wrong generation. He suggests that it is the daughers of women who have had access to primary education for the first time who will develop a fully modernistic view of the world, including the desire for small families. He cautions that primary education must be nearly universal or the coexistence with traditional values will dilute the impact of increased female education on fertility levels in developing countries. In the final analysis, he reaffirms the faith that education can serve as an engine of fertility decline: "It seems improbable—and has yet to be demonstrated—that any society can sustain high fertility beyond two generations of mass schooling."[55]

Sub-Saharan Africa faces a serious development dilemma with regard to education, for which there is no short-term solution. The growing gap between primary school leavers and jobs available in the modern sector is currently perhaps the most critical and potentially explosive development issue in the region. At the same time, however, mass education is clearly essential to help spark fertility decline and spur economic growth.

Life expectancy and health services

Overall life expectancy at birth for the 42 sub-Saharan African countries, although up from about 40 years in 1960, is still estimated to be only 49 years in the mid-1980s. This low figure is largely due to high infant and child mortality. Deaths to infants under age one average more than 100 per 1,000 live births in all but nine countries: Ghana, Kenya, Madagascar, Tanzania, Uganda, Zambia, Zimbabwe, Botswana, and South Africa (Table 1, page 6). Current infant mortality rates in the United States, Canada, and Western Europe are around 11 and lower. Death rates for children ages one to four range from 13 to 50 per 1,000, compared to almost zero in the U.S., Canada, and Europe. In many sub-Saharan African countries, deaths to children under age five make up more than half the total of annual deaths; in developed countries their share is 1 to 3 percent.[56] Maternal mortality rates are also high: 2 to 6 deaths per 1,000 live births—100 to 500 times the rates in developed countries.

Observers are usually quick to declare that African life expectancy is "by far the lowest of any region in the world."[57] This is an exaggeration. In the Asian subcontinent, as noted, life expectancy is similarly low (44 to 51 years) in Bangladesh, India, Nepal and Pakistan, although 66 in Sri Lanka.

Nevertheless, African mortality rates are high by any standard. The chief causes of death (and high sickness rates) are infectious diseases such as tuberculosis, malaria, measles, onchoceriasis, trypanosomiasis, and tetanus; intestinal infestations like hookworm; and, among infants and children especially, diarrhea and consequent dehydration, and malnutrition.[58] Better diets, better health and sanitary practices, and better health care could potentially combine to bring death rates plummeting. UNICEF (U.N. Children's Fund), for example, began a campaign in 1982 for four low-cost basic measures that could halve child death rates in developing countries: oral rehydration, a simple treatment to stop diarrheal dehydration; immunization against six common diseases; breastfeeding for at least six months and better weaning practices; and growth monitoring to enable mothers to detect malnutrition early and deal with it. Nigeria, Zaire and Zimbabwe are among the first sub-Saharan African countries to join in at least parts of this campaign for which UNICEF could claim dramatic successes already by the end of 1984.[59]

The overall statistics suggest that health services have improved in most sub-Saharan African countries since independence. For example, between 1960 and 1980 the number of nurses in Malawi increased from one for every 12,940 persons in the population to one per 3,830, and in Zambia from one per 9,920 to one per 1,730.[60] But such statistics fail to indicate that most health professionals, virtually all hospitals, and the majority of other health facilities are located in urban centers, while most of the population lives in rural areas. Most Africans have very little or no access to modern health care.

Governments spend less on health (5 to 7 percent of annual budgets) than on education, and although spending increased during the 1970s, it barely kept pace with population growth, so per capita expenditure ($1 to $4 in the early 1980s) has not improved.[61]

Rapid population growth affects a population's health status and the delivery of health services in at least three ways. First, as Africa's current record shows, rapid increases in numbers, combined with economic stagnation, make it difficult to increase per capita spending so that services can be upgraded and expanded. Second, prolonged high fertility means a high proportion of young children in the population—the group with the highest illness and mortality rates in developing countries and hence the greatest need for health services.[62] Third, high fertility and closely spaced births are associated with high rates of maternal and child illness and mortality.[63]

African women typically begin childbearing as soon as biologically possible and stop only at menopause. Thus their health is endangered by many pregnancies during the far less favorable teenage and later reproductive years and too little time to recuperate between closely spaced pregnancies. For children, close birth spacing frequently means that breastfeeding of an older infant is interrupted after less than a year, leading to malnutrition and the child's death. For these reasons, many African governments justify support of family planning services not on the grounds that rapid population growth retards social and economic development but rather that improved child spacing would benefit the health of African women and their children.

The relationship between high infant and child mortality and high fertility is an important health and policy issue in Africa. The traditional and still predominant view is that high infant and child mortality promotes high birth rates because couples need assurance of enough surviving children, particularly sons, to support them in old age. Another school of thought is that high infant mortality results in part from high fertility; parents may give only marginal care to new infants when children exist in surplus. Whatever the explanation, overall fertility is unlikely to drop in Africa unless mortality rates continue to decline and parents see that children are in fact likely to survive to adulthood.

This assertion is important for policy reasons. Development experts tend to harbor a nagging, though seldom vocalized, question: If rapid population growth is a major contributor to Africa's current development malaise, why assist health programs when the result will be lower mortality and higher rates of population growth? However, if declining infant and child mortality is itself a prerequisite for fertility decline, the question has been largely answered.

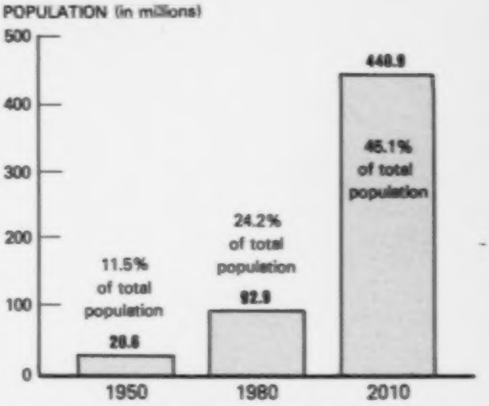
The question is also important demographically. Here the answer can be illustrated with two projections for Swaziland, based on the 1980 population projections of the U.N. Both assume the same fertility trend, but life expectancy is assumed to rise from 46 to 56 years between 1980 and 2000 in the first projection and twice as fast—to an undoubtedly unrealistic 67 years by 2000—in the second projection. The projected 2000 population for Swaziland in the second case (1,088,300) is only 6.5 percent greater than in the first projection (1,021,800).[64] Changes in fertility are much more important than changes in mortality in determining the future size and structure of Africa's populations.

This may seem puzzling because it was the large drop in mortality which came with the introduction of modern medical and public health technologies that set off the surge in Africa's population growth. But now death rates have dropped to the point where fertility becomes the key component in population growth. In Kenya, for example, the death rate per 1,000 population in the early decades of the 20th century may have been between 40 and 50, close to the birth rate, because indications are that the population was not growing. By 1984, the death rate was down to 14 per 1,000 population, while the birth rate was 55 per 1,000 (Table 1, page 6). The important question now for the demographic future of sub-Saharan Africa is not whether death rates will fall further, but when and how fast birth rates will fall.

Urban growth

The future promises even more rapid urbanization for the region. According to the medium variant of the 1982 U.N. population assessments, the overall urban population of the 42 countries grew from 21 million in 1950 to 93 million in 1980, a 450 percent increase in 30 years. For the 30 years to 2010, the U.N. projects a 475 percent increase to 441 million (see Figure 7). The proportion of the total population living in urban areas is projected to grow from 24 percent in 1980 to 45 percent in 2010.

Figure 7. Sub-Saharan Africa Urban Population Growth: 1950-2010



Source: U.N., *Demographic Indicators by Countries as Assessed in 1982*, medium variant.

In Nigeria, the U.N. estimates that urban dwellers increased 480 percent between 1950 and 1980, from 2.4 to 16.4 million, and will go up 570 percent in the following 30 years, to 94.1 million in 2010—a number greater than the total population of Nigeria in 1984. For Kenya, the figures are from 325,000 in 1950 to 2.4 million in 1980—a 730 percent increase—and 18.8 million in 2010—another 780 percent increase.

Rapid urbanization has many negative results, as summarized by delegates to the Second African Population Conference, convened by the Economic Commission for Africa in January 1984 in Tanzania:

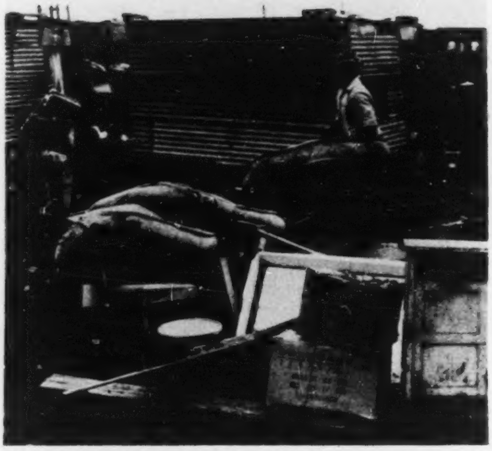
> "The major cities in Africa [are] plagued by the adverse effects of rapid growth—urban sprawl, unemployment, delinquency, inadequate social services, traffic congestion and poor housing. Undoubtedly these features and the rapid rate of urban population growth [will],

from now till the end of the century, have serious implications for food, housing, education, health services, job opportunities and social amenities in the urban areas and the nation(s) as a whole."[65]

Projected housing needs are a prime example of the pressures on urban facilities generated by rapidly growing population. In Kenya, about 3 million new housing units would be required to accommodate the projected growth in urban dwellers between 1980 and 2010—roughly equivalent to constructing 15 new Nairobis in 30 years. Further, most of this will have to be government funded; most modern urban housing in Africa today is not constructed by a vibrant private sector. About 70 percent of Kenya's new households in recent years have been unable to afford privately built housing.[66]

Why do Africans flock to cities in such numbers, especially when jobs are so scarce? The region has a long urban history as some cities evolved as administrative and marketing centers during colonial times, but the urban explosion is recent. The prospect of paid employment is certainly a major draw. For those fortunate enough to find a job in industry, business or government, remuneration is usally many times higher than incomes in rural areas. Cities also invariably contain a disproportionate share of modern social services—schools, health facilities, potable water, entertainment. Even if migrants themselves do not share in all the amenities, the prospects are real that their children will have opportunities not available to them in the countryside. Despite the squalor of huge garbage piles, abandoned automobiles, open sewers, shanty housing, air pollution, noise, traffic, and physical danger, urban centers still offer a glimmer of hope for a better life.

Rapid urban growth is a corollary of high rates of national population growth. Rates of natural increase (births minus deaths) are also high in cities and probably contribute as much as in-migration to their exploding populations. High population growth pressing on rural economies adds to the decision to migrate. By this time, however, both the demographic and economic momentum toward urbanization are so great that even if birth rates were to begin to fall in sub-Saharan Africa, city growth would continue to be dramatic for several decades.



Shanty housing and trash piles illustrate the adverse effects of explosive urban population growth.

Some African governments have adopted policies that attempt to spread this explosive urban growth about the country. Nigeria's planned new capital city, Ajuba, 300 miles north of Lagos, is largely motivated by a desire to diffuse the explosive growth of Lagos. Kenya's policy is to develop growth centers throughout the nation to reduce the pressures on Nairobi and Mombasa. These policies have been mostly ineffective, however, and should not be regarded as realistic alternatives to policies to deal with the underlying problem of rapid population growth. Further, it is not unequivocally clear that urban decentralization is economically advantageous in developing countries. Mabogunje and Arowolo suggest that it is not: "From the economic standpoint, agglomeration of industrial and commercial activities in a few centers is a sure way to ensure maximum economic benefits under conditions of economic 'take-off.'"[67]

In most parts of the world, urban women have fewer children than rural women. In sub-Saharan Africa, however, as noted, urban fertility remains high. For example, the survey conducted in northern Sudan in 1979 as part of the World Fertility Survey found a fertility rate of 6.5 births per woman in rural areas, 6.1 in smaller towns and cities, and 5.6 in larger cities. This relatively small difference may be because a large proportion of city residents are recent arrivals from the countryside who retain rural patterns of fertility behavior. Important to watch will be the fertility behavior of the second and third generations of urban residents in Africa.[68]

Rapid population growth has clearly made sub-Saharan Africa's effort to achieve social and economic development much more difficult. The rapid increase in numbers:

- Makes it difficult for African nations to produce enough food for their populations and contributes to widespread malnutrition and hunger;
- Is a major contributor to deforestation, soil degradation, and desertification which destroy the resource base required to support future generations;
- Aggravates massive and increasing underemployment and unemployment and virtually ensures that only a small proportion of new workers will find jobs in the modern sector of the economy;
- Makes it increasingly difficult to improve and expand education and health services;
- Combines with slow economic growth to restrain or reduce national per capita incomes.

Of course, a slower rate of population growth would not in itself be enough for a successful development effort and should in no way be regarded as a substitute for needed agricultural reforms, radical land and water conservation measures, sustained economic growth and job creation, more and better education and health services, and more rational development of cities. At the same time, a drop in population growth could help make social and economic development programs more effective in improving the lives of African peoples.

Development itself, especially better health practices and some primary education, can increase fertility in the short run. But over the longer term, fertility is almost certain to decline as Africa moves away from traditional peasant societies toward a world of modern medicine, education, wage employment, and scientific farming.

Determinants of High Fertility

Social science research has identified factors associated with high fertility in any setting and many of these help explain why fertility remains so high in sub-Saharan Africa.

Little education; rural residence; low income

Three factors are key contributors to the region's high fertility. Africans are largely smallholding farmers who earn little income and have little, if any, education. Poor, illiterate or poorly educated peasant farmers have large families worldwide.

Although school enrollment has increased markedly, at least to the 1980s, illiteracy and low educational attainment are still widespread, especially among women. In 1980 in Burkina Faso, only 5 percent of adult women were literate and 18 percent of men. In Sierra Leone, the figures were 17 percent for women and 31 percent for men; in Central African Republic, 19 percent for women, 48 percent for men.[69] Also in 1980, the proportion of women in the childbearing ages (15-49) who had ever been enrolled in primary school was just 9 percent in Ethiopia, 8 percent in Burkina Faso, 49

Table 6. Percentage of 1982 Population in Rural Areas and Percentage of 1980 Labor Force in Agriculture

Country	Percentage of population in rural areas 1982	Percentage of labor force in agriculture 1980
Western Africa		
Benin	85	46
Burkina Faso	89	82
Ghana	63	53
Guinea	80	82
Ivory Coast	58	79
Liberia	66	70
Mali	81	73
Mauritania	74	69
Niger	86	91
Nigeria	79	54
Senegal	66	77
Sierra Leone	77	65
Togo	79	67
Eastern Africa		
Burundi	98	84
Ethiopia	85	80
Kenya	85	78
Madagascar	80	87
Malawi	90	86
Mozambique	91	66
Rwanda	95	91
Somalia	68	82
Sudan	77	78
Tanzania	87	83
Uganda	91	83
Zambia	55	67
Zimbabwe	76	60
Middle Africa		
Angola	78	59
Cameroon	63	83
Central African Rep.	63	88
Chad	81	85
Congo	54	34
Zaire	62	75

Sources: World Bank, *World Development Report 1984*, Tables 21 and 22.

percent in Rwanda, 14 percent in Burundi, and 48 percent in Kenya.[70]

The vast majority of Africans still live in rural areas. As Table 6 shows, the proportion of population in rural areas in 1982 was 79 percent in Nigeria (in Western Africa), 85 percent in Ethiopia and Kenya, 87 percent in Tanzania, and 76 percent in Zimbabwe (in Eastern Africa), and 62 percent in Zaire (in Middle Africa). Similarly, most of the labor force continues to work in agriculture. In 1980, 80 percent of the labor force in Ethiopia worked in agriculture, 78 percent in Kenya and Sudan, 83 percent in Tanzania, and 75 percent in Zaire (Table 6).

And, as noted, Africans are very poor, with 21 countries—half of those in the region—ranked by the World Bank among the 34 poorest countries in the world in terms of per capita GNP, although average income in the aggregate is not quite so low as that of the Asian subcontinent. And within even countries with relatively higher incomes, such as Nigeria, average incomes and the benefits of development are lower for the rural population.

Status of women

Women's restricted roles also contribute to the persistence of high fertility. Although African women have traditionally handled most of the family food production and have therefore played a major role in agriculture, their primary roles are still seen as those of wife and mother. They have limited legal rights and in many places their position is further weakened by the practice of polygyny.[71] Precisely because of the limited opportunities women have, the status imparted by childbearing becomes all the more important. As demographer Helen Ware writes:

> "However downtrodden they may be as daughters, wives, or daughters-in-law, as mothers they wield very considerable power and influence. If declining fertility and an antinatalist ethos were ever to rob them of this status without their having the opportunity to gain status through other channels, then their position might well be weakened rather than strengthened."[72]

African women value children for their labor as well. With the arduous chores of primitive cooking and housekeeping, fetching water and fuelwood, added to labor in the fields, it is little wonder that women welcome assistance provided by

Women's restricted roles and need for children's assistance with heavy workloads help keep fertility high.

children.[73] Even children enrolled in primary school help with house and farm work. A familiar sight to travelers in Africa is young boys along the roadside caring for two or three goats or cows. And with secondary school enrollments so low, virtually all rural youth are available for full-time work around the ages of ten or eleven.

Marriage and family

Marriage and family patterns also contribute to high fertility. Around 1977, women's average age at first marriage was an estimated 18 years in Benin, 19 in Ghana, 20 in Kenya, and 18 in Cameroon. This compares with 25 in Sri Lanka and 24 in Tunisia, where total fertility rates are currently much lower at 3.2 and 4.9 births per woman, respectively.[74] Once women marry, there are large extended families to help care for the children who promptly begin to arrive.

The psychological benefits of children cannot be overestimated in the African setting. Africans often respond to family planning advocates by pointing out the great attachment of the people to their children. Indeed, in a world marked mostly by the drudgery of subsistence agriculture, children and family provide the greatest psychological satisfaction and human drama in many lives.[75]

Old age security

African parents understandably fear the economic threat inherent in continuing high infant and child death rates. In the absence of pensions or public social security, children are seen as the only sure source of parents' security and economic support in old age. African women often lack the right to inherit the use of land, so for them in particular there is a real need for many sons to ensure that some will survive to take care of them in old age.[76]

Tribalism

Sub-Saharan Africa's great ethnic diversity also tends to promote high fertility. Demographers Frank and Susan Mott observe from their experience in Kenya: "Like many Africans, Kenyans generally identify with their tribe more than with the political entities carved by the colonials that bear little relationship to these ethnic groups."[77] They point out that although the larger tribes, the Kikuyu and Luo, tend to dominate Kenyan politics, the smaller tribes are sensitive to their relative strength in the political order, and this is perceived to be related to numbers. The Motts argue that for a family planning program to be successful in Kenya, it would have to be perceived as being implemented equally among all ethnic groups.

This jostling for tribal equality or supremacy in numbers happens to varying degrees in many African countries: among Hutu and Tutsi in Burundi, Shona and Ntebele in Zimbabwe, Yoruba, Ibo, Hausa, and Fulani in Nigeria, and so on.

Religion

Research has not clearly established a link between religion and fertility in Africa, but religious factors also may play a role in high fertility. Large numbers of Africans still adhere to animistic beliefs that are based on a mystical, nonscientific view of the world. Planning the spacing and size of one's family may well not fit into lives thought to be dominated by supernatural forces.[78]

At the same time, a notable feature of modern sub-Saharan Africa is the inexorable decline of animistic religions and their replacement by the great world religions, particularly Islam and Christianity (although many traditional beliefs are carried over and live alongside the newly adopted creeds). Islam is not theologically opposed to the use of modern forms of contraception or planning of families, but as actually practiced in rural Africa it tends to provide strong support for large families and restricted roles for women.[79]

Christianity is also expanding. In Kenya, about 60 percent of the population is Christian, with Catholics increasing rapidly although still outnumbered by Protestants.[80] Attitudes toward family planning and contraception vary widely among Catholics in Africa, as elsewhere in the world. Nevertheless, in countries like Burundi, the political influence of the Roman Catholic Church and provision of many health services through Catholic missions may be added impediments to a working population program.

Personal security

Faruqee and Gulhati note an often overlooked stimulus to high fertility in Africa which is the need to provide security for persons and property.[81] Rural life is often isolated and central governments can seldom provide the protection of law enforced by an effective and impartial police force. The national govenment in Kinshasha, for example, cannot guarantee rule by law in northeastern Zaire. Large numbers of children provide the population base to help protect the persons and property of the family, clan, and tribe.

Historical perspective

Sub-Saharan Africa's high fertility also should be viewed in light of its population history. For some 250 years between 1650 and 1900, population numbers stayed at about 100 million because of the high loss of life from disease, erratic food supplies from subsistence farming in a tropical climate, and the slave trade and tribal wars.[82] With European colonization and development of new transport networks, traditional African diseases spread more widely and European diseases were added to them. As a result, some governments were concerned about depopulation as late as the 1930s. The surge in population growth that came as death rates were reduced by modern medical science seems recent.[83] Cultural traditions die hard in peasant societies, even as external circumstances change. With mortality rates still relatively high, the days of high death rates and possible depopulation are more than lingering memories.

Contraceptive knowledge and use

Added to all the above factors encouraging high fertility is the fact that knowledge about safe, effective modern contraceptive methods and access to them are limited to urban centers in many parts of Africa. The fertility surveys of the late 1970s and the early 1980s conducted in ten sub-Saharan African countries as part of the World Fertility Survey (WFS) reveal that the proportion of married women who even knew about modern contraception was 50 percent or more in only four countries: Ghana, Ken-

Table 7. Total Fertility Rate, Desired Family Size, Knowledge and Use of Contraception: World Fertility Survey Findings in 10 Sub-Saharan African Countries

(Currently married women aged 15-49)

Country	Survey year	Total fertility rate[a]	Average desired family size	Percent aware of modern contraception[b]	Percent using modern contraception[b]	Percent using traditional contraception[c]	Percent using any contraception
Benin	1981/2	7.1	7.5	13	(.)	17	17
Cameroon	1978	6.4	8.0	29	(.)	2	2
Ghana	1979	6.3	6.1	59	6	4	10
Ivory Coast	1981/2	7.4	8.5	20	1	2	3
Kenya	1977/8	8.0	7.2	88	5	2	7
Lesotho	1977	5.9	5.9	61	2	3	5
Mauritania	1981	7.7	9.2	6	(.)	1	1
Nigeria	1982	6.3	8.4	21	—	—	6
Senegal	1978	7.1	8.8	20	1	3	4
Sudan (North)	1979	5.7	6.3	50	4	1	5

Sources: WFS *Country Reports;* World Bank, *World Development Report 1984*, Tables 3 and 4; Robert Lightbourne and Susheela Singh with Cynthia P. Green, "The World Fertility Survey: Charting Global Childbearing," *Population Bulletin*, Vol. 37, No. 1 (March 1982) Tables 3 and 15; WFS staff, London, December 1984, personal communication.

[a] Average for the three years before the survey. See Table 1 for definition of the total fertility rate.

[b] Modern contraceptive methods = sterilization, pill, injectables, IUD, condom, diaphragm, foam.

[c] Traditional contraceptive methods = abstinence, withdrawal, rhythm, folk methods.

— = data not available. (.) = percentage is less than 1 percent.

ya, Lesotho, and northern Sudan (see Table 7). In four countries, less than 1 percent of currently married women aged 15-49 were actually using modern methods (sterilization, the pill, injectables, IUD, condom, diaphragm, and foam). In the other six countries, the highest proportion using modern contraception was Ghana's 6 percent. For Africa's vast majority of rural couples, spacing or limiting their children still means sexual abstinence, illegal abortion, or, at best, ineffective and difficult traditional contraception—withdrawal, rhythm methods, or folk methods like charms and potions.

Prospects for Fertility Decline

Desired and actual number of children

The obstacles to reducing sub-Saharan Africa's high fertility are reflected in findings from the ten WFS surveys. With these data it is possible to compare the average number of children women told interviewers they would like to have if they could choose their "exact number of chidren" (desired family size) with the average number that women were actually having at the time, as measured by the average total fertility rate for the three years before the survey.

The average desired family size was lower than the actual total fertility rate only in Ghana (6.1 versus 6.3 births per woman) and in Kenya (7.2 versus 8.0). (See Table 7.) In Lesotho, average desired family size and current fertility were the same, 5.9 per women. In the other seven countries, the average number of children women said they wanted was higher than the current total fertility rate. In Mauritania, for example, the total fertility rate around 1981 was 7.7 births per woman, while average desired family size was 9.2 children per woman. This suggests that women in most sub-Saharan African countries are having large numbers of children because they want them.

Social and economic change

Experience in almost all other parts of the world—historically in today's developed countries and recently in many developing countries outside Africa—has shown that desired family size falls and actual fertility consequently does too as development progresses. Based on experience of the developed countries and developing countries like Korea, Singapore and Hong Kong where fertility began to decline in the 1960s, it was once thought that reduced fertility required industrialization, a high proportion of urban dwellers, and relatively high per capita incomes. Now it has been shown that fertility can decline markedly in countries where per capita income is low, the population still largely rural, and the economy not yet highly industrialized (examples are China, India, Indonesia, Thailand and Sri Lanka). Recent fertility declines have been associated less with national per capita income levels than with rises in life expectancy, female education, and the income of poor groups in countries where income gains and education and health services (including family planning) have been more evenly distributed.[84]

The economic outlook for sub-Saharan Africa does not promise that the current decline in per capita income will soon reverse. In its *1984 World Development Report,* the World Bank projects that per capita income in the 21 poorest sub-Saharan African countries will decline by 0.1 percent a year from 1985 to 1995 even in an optimistic scenario that assumes a better economic climate in developed countries and hence more investment and aid to developing countries and better markets for their exports.[85] With economic stagnation, the further improvements in life expectancy and female education that could reduce desired family size are likely to be slow in coming.

A population paradox

In sum, African parents have large families because they want them and perceive them to be in their economic and personal interest. In combination with an unpromising economic outlook and slow social development, the prospects are that fertility and population growth rates will remain high for the foreseeable future.

All the elements of the equation sum into a paradox. Large families and consequent rapid population growth are detrimental to the social and economic development effort in many African countries, thus negatively affecting most families. At the same time, high infant and child mortality, poverty and limited economic opportunities, insecurity, and restricted access to education mean that African couples' choice of large families is reasonable.[86] The dictum of French agronomist Rene Dumont on changing agricultural practices in developing countries applies to the planning of families as well: One has to learn from the peasants before one can presume to teach them.[87]

Along with this paradox at the individual level, there is a vicious circle at the public level. Ultimately it is poverty and limited social and economic opportunity that cause the gap between public and private interests, between the need to contain the rate of population growth to advance the social and economic effort and the desire of African parents for large families. Ultimately it is the alleviation of poverty and increased social and economic opportunities that will close the gap. Yet rapid rates of population growth themselves make it increasingly difficult for African nations to reduce poverty and improve the lives of the people.

Public Ambivalence Toward Population Policy

Key to closing the gap between public and private interests, as experience in other developing countries has shown, is the development of explicit population policy and political commitment to population programs. Adoption of what might be called population policy is spreading in sub-Saharan Africa, but few national governments as yet support family planning programs explicitly to reduce fertility and population growth. There are several possible explanations for African leaders' ambivalence about such a policy.

Political concerns

Much of the pressure to reduce population growth to speed development is seen as coming from Western aid donors. Africans have been concerned that emphasis on population policy glosses over inequalities in the world economic order which many consider the real root of the region's poverty and slow development.

Similarly, many Africans still view population programs as family planning services only and insist that it is social and economic development that will lower birth rates eventually. This view now seems to be evolving into the position that family planning programs are a help but not alone enough to bring about development.

Political caution is another explanation. Religious and tribal rivalries make population and family planning programs very sensitive political issues. Further, governments are reluctant to move so long as there is no groundswell of popular demand for contraceptive services to reduce family size. Political leaders worldwide are notoriously focused on short-term issues for which they will be held politically responsible rather than longer-term issues which demand some vision of the future.

Some of this inattention to family planning programs is understandable. Eager to pull their new nations into the modern world, African governments and leaders have been preoccupied with the more immediately productive aspects of economic and social development and foreign assistance.[88] Also, until recently in most countries, they have lacked reliable data to demonstrate how fast the population is growing. When Senegal's census of 1976 indicated that population growth had risen from 2.2 percent a year in the 1960s to 2.9 percent, the president's response was to create a national population commission to consider family planning services.[89] Kenya's commitment to family planning has strengthened noticeably since its WFS survey of 1977-78 and census of 1979 revealed that its family size and population growth rate ranked highest in the world.

Vast, empty spaces, as here in southwest Kenya, do not give the impression of an overpopulated continent. But much of this land is only marginally useful.

Visual images

Africa's vastness dispels the urgency of rapid population growth as an issue. Population pressures are obvious in some areas. Lagos has too many people for its present infrastructure. Smallholdings clamber up the steepest pitches of the mountains of Burundi and Rwanda as land grows scarcer. But much of sub-Saharan Africa consists of vast, sparsely inhabited areas which give the visual image of resources waiting to be exploited. Flying over Tanzania one hardly has the impression of an overpopulated continent. In part, the image is false: many sparsely populated areas are that way precisely because the land is of marginal usefulness. In part, it is true: countries like Zaire and Zambia have large amounts of unused cultivable land relative to the size of their populations.

Accommodation to growth; expanding population base

A similar circumstance, not so often

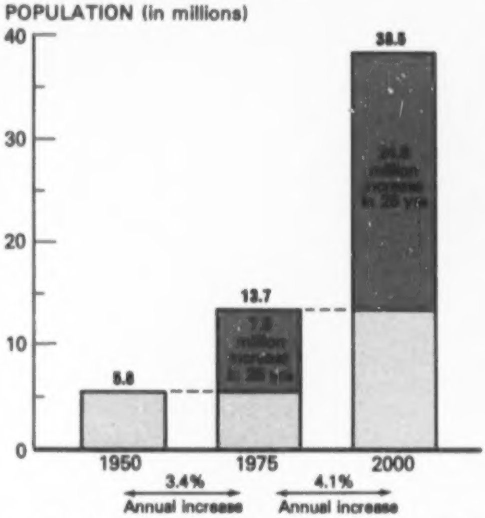
noted, is that Africa at the time of independence, in the early 1960s for most countries, had a smaller population relative to the size of the region's resource base than was the case in equally poor nations like India and Pakistan when they gained independence.[90] Thus when population growth *rates* increased impressively with the fall in death rates after World War II, the actual *number* of people added each year was smaller—both absolutely and relatively—than in Asia and population pressures therefore less.

Rapid population growth is not a new phenomenon of the 1980s for sub-Saharan Africa; growth rates have been high for the past quarter of a century and longer. During 1960-65, according to U.N. estimates, population growth already averaged 3.5 percent a year in Kenya, 2.9 percent in Tanzania, and 2.8 percent in Ghana.[91] But until the 1970s, many African nations nevertheless managed to raise incomes and living standards: a greater proportion of children were in school, health care was better, and per capita income was higher in the mid-1970s than at the time of independence. To some degree, the countries had accommodated rapid population growth.

However, progress might have been even more rapid, especially for Africa's large numbers of poor rural people, if population growth had been slower during this period.[92] Now in the 1980s, progress may come to a halt as per capita income declines. While the decline in gross domestic product since the end of the 1970s results from many circumstances, including the effects of recession in developed countries which are beyond the control of African governments, continued rapid population growth is certainly an important part of the per capita income equation.

Also important to keep in mind are the implications of compounding growth. Even if a rate of population growth remains constant or rises only slightly, its application to an ever-growing base means that the absolute number of persons added to a population each year becomes larger and larger. An example is the U.N.'s medium trend line for Kenya. Beginning with 5.8 million people in 1950, Kenya's population grew at an average 3.4 percent a year over the next 25 years to reach 13.7 million in 1975, 2.4 times its 1950 population and a gain of just under 8 million people (see Figure 8). By 2000, the U.N. projects Kenya's population will be 38.5 million. In this 25-year period, the annual growth rate assumed in the medium projection seems only a little higher, 4.1 percent; the relative population increase is only a little higher, 2.8 times; but the absolute increase in numbers is almost 25 million people.

Figure 8. Kenya: Compounding Population Growth, 1950-2000



Source: U.N., *Demographic Indicators by Countries as Assessed in 1982*, medium variant.

The relatively smaller population base from which independent Africa began its development effort should not be a ground for complacency, but rather may also be viewed as an important advantage that can be quickly forfeited under the pressure of compounding growth.

Development limitations of micro-states

The preponderance of micro-states has also been an important influence on government attitudes toward population policy. Fully 32 of the 42 nations had populations under 10 milion in 1984. Each maintains a complete government apparatus, with ministries, foreign representation, and a defense force. A longstanding concern is that the small size of internal markets discourages new economic activities, or, as the Economic Commission for Africa puts it, "reduces the ability of the region to gather the necessary momentum for socio-economic take-off."[93]

Theoretically, this could be overcome with the creation of common, free-market areas. However, as economist Andrew Kamarck observes: "In practice . . . the play of political forces makes the establishment of such larger multi-national markets almost impossible . . . In reality, therefore, the political boundaries of the micro-states that break up Africa into many small market units are real barriers to the possibilities of economic development in Africa."[94] The breakup in the early 1970s of the East African Economic Community, a union of Kenya, Tanzania, and Uganda, probably demonstrates the realities of common-market politics in Africa.

An interesting related issue, if much less important, stems from the tendency of international organizations to use a population of one million as the cutoff point for countries to be included in statistical tables and for other purposes. Five of the countries in this *Bulletin*'s definition of sub-Saharan Africa fall below that cutoff: Djibouti, Equatorial Guinea, Gambia, Guinea-Bissau, and Swaziland. Officials in such countries watch with sometimes thinly veiled satisfaction as the population approaches one million, in anticipation of rising status among the community of nations. (Botswana passed the one million mark in 1984, according to U.N. estimates.)

French intellectual tradition

An influence on attitudes toward population in Francophone Africa is a legacy of French intellectual tradition.[95] France's birth rate fell far earlier and faster in the 19th century than that of any other European nation, arousing concern among French political and intellectual leaders that has persisted ever since as the country lost its long lead in population size over its neighbors, particularly Germany. This traditional concern has been reflected in views of leading French demographers, especially Alfred Sauvy, who has argued for the economic advantages of population growth and against the contention that rapid population growth retards economic development in Africa.

Caldwell observes that he "has repeatedly been astonished at the very different attitudes to population growth that African administrators have absorbed from French universities and those that Anglophone administrators have acquired in American and British universities . . . The English-speaking administrator will have read articles or talked to technical assistance experts reflecting worry with rapid population growth in developing countries; the French-speaking administrator may well have come across an article, review or lecture by Alfred Sauvy with a very different philosophy."[96] These attitudes are reinforced by the fact that the 19 Francophone countries include some of the least populated countries in the region and several, like Cameroon, the Congo and Gabon, are located in the infertility belt.

Current Status of Population Policies

A few countries have issued official pronouncements on population policy. For others, the development of policy must be gleaned from economic development plans and other indirect sources, such as replies to the bienniel U.N. population policy inquiry and, most recently, country statements at the January 1984 Second African Population Conference and the August 1984 International Population Conference in Mexico.

Caution is required in taking these statements at face value as evidence of strong political commitment to population planning. An example is Kenya, which launched a family planning program to reduce fertility in 1967, the first government program in sub-Saharan Africa. Demographer Donald Warwick argues that this was mostly in response to outside pressure as Kenya sought to improve its international image which had suffered because of the Mau Mau rebellion, tribal conflict, and constitutional struggle.[97] He points out that support from senior government officials was weak; after 1967 President Jomo Kenyatta never again mentioned the population program. Following Kenyatta's death in 1978, however, President Daniel arap Moi has repeatedly stated that population growth should be reduced, which along with the establishment of a National Council for Population and Development in 1982 is probably a more important indicator of political commitment than the formal adoption of the policy in the 1960s.

Before the 1974 World Population Conference in Bucharest, the only sub-Saharan African nations with official policies to reduce population growth as an aid to development were Kenya and Ghana (and the Indian Ocean island nation Mauritius). Five others permitted private family planning services for health and welfare reasons. Since then, and especially since the late 1970s, government views have changed rapidly. As of mid-1984, at least 13 countries had indicated that they consider current fertility rates too high and support government and/or private family planning programs to reduce fertility: Botswana, Burundi, Gambia, Ghana, Kenya, Lesotho, Nigeria, Rwanda, Senegal, South Africa, Uganda, Zambia, and Zimbabwe.[98] Five had set explicit goals: Botswana to increase contraceptive use to 15 percent by 1985; Ghana to reduce population growth to 2 percent a year by 2000; Kenya to reduce growth to 3.3 percent by 1988; Rwanda to reduce growth to 3.5 percent by 1986; Uganda to reduce growth to 2.6 percent by 1995. At least seven had formed national population commissions, councils, or working groups to discuss development of population policy: Kenya, Liberia, Nigeria, Rwanda, Senegal, Sierra Leone, and Sudan.[99]

Thirty-six of the 42 countries in the region were represented at the January 1984 Second African Population Conference, which noted that "current high levels of fertility and mortality give rise to great concern about the region's ability to maintain even living standards already attained since independence." The conference adopted the Kilimanjaro Programme of Action on Population, which calls on member states of the Economic Commission for Africa to "ensure the availability and accessibility of family planning services to all couples or individuals seeking such services freely or at subsidized prices."[100]

Countries such as Togo, Zaire and Zambia are giving stronger support to the provision of family planning services. Malawi, long hostile to any consideration of family planning programs, has now discussed expansion of a pilot child-spacing program with the World Bank. Major General Muhammadu Buhari, head of Nigeria's current government, has recently issued statements supportive of population activities, and the Nigerian delegation to the August 1984 International Population Conference reported:

> "The Government now recognizes, more than ever before, the fact that the overall rate of growth has to be brought down to the level at which it will not impose excessive burdens on the economy in the long run. The Government plans to achieve this through an integrated approach to population planning."[101]

The general trend thus appears to be

Table 8. Strength of Family Planning Effort in Sub-Saharan Africa: 1982

Country	Family planning index	Country	Family planning index	Country	Family planning index
Western Africa		**Eastern Africa**		**Middle Africa**	
Burkina Faso	E	Burundi	E	Cameroon	E
Ghana	E	Ethiopia	E	Central African Rep.	E
Guinea	E	Kenya	D	Chad	E
Ivory Coast	E	Madagascar	E	Congo	E
Liberia	D	Malawi	E	Zaire	E
Mali	E	Mozambique	E		
Mauritania	E	Rwanda	D	**Southern Africa**	
Niger	E	Somalia	E	Lesotho	E
Nigeria	E	Sudan	E		
Senegal	E	Tanzania	D		
Sierra Leone	E	Uganda	E		
Togo	E	Zambia	E		
		Zimbabwe	D		

Source: World Bank, *World Development Report 1984*, Table 6, p. 200, based on Robert J. Lapham and W. Parker Mauldin, "The Measurement of Family Planning Effort," January 1984, unpublished paper.

Family planning index: A = very strong; B = strong; C = moderate; D = weak; E = very weak or none. For description of the index, see text below.

toward a more open and favorable discussion of population programs and policies, though the ultimate effect remains to be seen.

Family planning services

As of mid-1984, some 26 countries in the region were providing some government family planning services, usually integrated with maternal and child health services. About 20 of the 42 countries had private services provided by national family planning associations affiliated with the International Planned Parenthood Federation; most of these receive some government funding.[102] The rationale for family planning services in all but the 13 countries named above is not explicitly to reduce fertility but to improve the health of mothers and children. Whether through government or private services, coverage is very limited, especially in rural areas.

A background paper prepared by demographers Robert Lapham and Parker Mauldin for the World Bank's *1984 World Development Report* classified developing countries on family planning "effort" as of 1982, using a 30-item scale covering such factors as official political commitment, availability and quality of family planning services, method mix, outreach, use of mass media, local financial support, and record-keeping and evaluation. The reality of family planning programs in sub-Saharan Africa is quickly obvious: of the 31 nations listed for which data were available, the family planning effort of five was classified as "weak" and that of the other 26 as "very weak or none" (see Table 8).

About ten sub-Saharan African countries do not support family planning services for any reason. Most are former French colonies—Burkina Faso, Chad, Gabon, Ivory Coast, Mauritania, and Niger—of which all but Ivory Coast still have a provision from a 1920 French law banning contraceptive advertising and distribution. In some cases this prohibition is not enforced, though still on the statute books.[103]

Policy Options

With the climate for population policy changing perceptibly, the next question is what practical programs can be adopted to reduce birth rates, especially in rural Africa. Sub-Saharan Africa has yet to produce a family planning program with a measurable effect on fertility that could serve as a model for other countries in the region. (The 20-year-old family planning program of Mauritius, conventionally listed in the region although 1,000 miles offshore in the Indian Ocean, rates "very strong" in Lapham and Mauldin's 1982 ranking and is widely credited for its role in reducing fertility to the current 2.9 births per woman in this island nation of 1 million people.) While experiences of countries in other parts of the world provide useful information, these must be adapted to the special circumstances of this poor, rural, little-educated region.

In general, sub-Saharan African governments will have to proceed on several fronts. Social and economic change is undoubtedly central to any hope of fertility reduction. Lower infant and child mortality rates, rising incomes, higher levels of education, more economic and social opportunities for women, and greater security would all serve to provide a climate more conducive to fertility decline. Of these, increased educational and economic opportunities for women may have the greatest effect.

Fertility declines in other developing countries have required the use of modern contraceptive methods. But marriage and breastfeeding practices are also involved in the first stages of fertility reduction. Evidence from elsewhere indicates that a rise in women's average age at marriage, which is low in Africa, can help reduce fertility even when desired family size is high. While legislation to raise the legal marriage age would be difficult to enforce in sub-Saharan Africa, rewards, such as increased schooling opportunities, could be offered to women who delay marriage. Togo, in 1980, set a minimum marriage age of 17 for women and 20 for men, and the Ivory Coast, in 1982, legislated age 18 for women and 21 for men.[104] The importance of marriage age was further recognized by government leaders at the Second African Population Conference, who resolved: "In view of current low mean ages at first marriage for females, national programs, especially in education, should aim at raising the age at marriage."[105]

A baby is weighed at a health clinic in Kenya. Lower infant and child mortality rates are among the changes that would produce a climate more conducive to fertility decline in sub-Saharan Africa.

Breastfeeding, which reduces fecundity and has thus probably kept African fertility below what it might otherwise be, is now declining in urban areas. Governments could counter this trend by providing information to mothers on the contraceptive effects of breastfeeding, as well as its important role in infant survival.

Family planning programs to provide modern contraceptive methods have been instrumental in reducing fertility rates in other developing regions. It is difficult to be optimistic about the adoption of modern contraception by large numbers of African women in the 1980s. The obstacles are formidable: high desired family size, a dim economic outlook, weak health care infrastructure, and the difficulty of service delivery in rural areas. In addition, many of the available methods—the pill, IUD, diaphragm—may prove inappropriate for the African setting.

On the other hand, the ten WFS country surveys found a small unmet need for family planning: 4 to 17 percent of women surveyed said they wanted no more children (most of these women already had at least six). Because of changing cultural and health practices—shorter breastfeeding and briefer sexual abstinence after childbirth—today's young African women may achieve their desired family size at earlier ages than their mothers did. What effect this will have on the demand for contraception is uncertain. The more important unknown is how the daughters of women in school for the first time will regard the traditionally large African family. In any case, even though the demand for family planning services is presently limited, or perhaps precisely because it is, African governments should ensure that what demand does exist is met. The very existence of services can increase demand by spreading the knowledge that spacing and limiting children efficiently and relatively painlessly is possible.

Because of the limited demand, the weakness of family planning programs operating so far, and the traditional social and economic milieu, African leaders insist that great sensitivity must be shown in implementing programs. Fred Sai, former professor of community health at the University of Ghana Medical School and a world-renowned expert on African population issues, argues: "The only way to have meaningful population and family planning programs is to put the programs firmly within people-oriented development programs and activities."[106] In this vein, the Zimbabwe Child Spacing and Family Planning Council has launched a community-based distribution program with fieldworkers regularly visiting rural women in the *kraals* to discuss family planning and provide contraceptives. As such experience accumulates, African countries can learn from each other.

An emphatic theme in country after country, even among those who regard high birth rates as inimical to development and the health of the population, is that any programs must be based strictly on voluntarism. Parents must be allowed to determine for themselves the size and spacing of their families. Any measures which even imply coercion or pressure must be rejected, not only because they would be contrary to the values of African culture but also because they could discredit the programs.

Conclusion

In its 1983 report, *ECA and Africa's Development, 1983-2008,* the Economic Commission for Africa, an organization representing all governments of the region, examines the future. Its scenario for Africa in 2008 if population growth continues unabated is a nightmare:

> "Firstly, the potential population explosion would have tremendous repercussions on the region's physical resources such as land and the essential social services—education, health, housing, nutrition, water, etc. At the national level, the socio-economic conditions would be characterised by a degradation of the very essence of human dignity. The rural population, which would have to survive on intolerable toil, will face an almost disastrous situation of land scarcity whereby whole families would have to subsist on a mere hectare of land. Poverty would reach unimaginable dimensions since rural incomes would become almost negligible relative to the cost of physical goods and services.
>
> The conditions in the urban centres would also worsen with more shanty towns, more congested roads, more beggars and more delinquents. The level of the unemployed searching desperately for the means to survive would imply increased crime rates and misery.
>
> Against such a background of misery and social injustice, the political situation would inevitably be difficult. The very consequence of extreme poverty would be social tensions and unrest which, in turn, would result in instability."[107]

But the ECA report also observes that men and women are the authors of development and that they can dream of an

Africa free from hunger, disease, unemployment and poverty, social and cultural imbalances, external domination, and racism. Whether the African reality over the next several decades comes closer to the nightmare or the dream is dependent on both population trends and the ability of governments in the region to achieve the radical reforms necessary to sustain the development effort. □

References

1. Brown, Lester R., et al., *State of the World 1985: A Worldwatch Institute Report on Progress Toward a Sustainable Society* (New York: Norton, 1985) pp. 1-2.
2. World Bank, *Toward Sustained Development in Sub-Saharan Africa: A Joint Program of Action* (Washington, DC: 1984) p. 1.
3. *Ibid.*, pp. 13-14.
4. World Bank, *World Development Report (WDR) 1984* (New York: Oxford University Press, 1984) Table 1, p. 192.
5. Population Reference Bureau, *1984 World Population Data Sheet* (Washington, DC: 1984).
6. World Bank, *1984 World Bank Atlas* (Washington, DC: February 1985).
7. World Bank, *WDR 1984*, p. 162.
8. United Nations, Population Division, January 4, 1985, personal communication.
9. From A.M. Carr-Saunders, *The History of Population* (London: Cass, 1964), as cited in Fred T. Sai, "The Population Factor in Africa's Development Dilemma," *Science*, Vol. 226 (November 16, 1984) pp. 801-805.
10. Population Reference Bureau, *1984 World Population Data Sheet.*
11. *Ibid.*
12. Mabogunje, Akin L. and Oladele O. Arowolo, *Social Science Research on Population and Development in Africa South of the Sahara*, Appendix 7 (Mexico City: International Review Group of Social Science Research on Population and Development, El Colegio de Mexico, 1978) p. 18.
13. Frank, Odile, "Infertility in Sub-Saharan Africa: Estimates and Implications," *Population and Development Review*, Vol. 9, No. 1 (March 1983) p. 142. See also Joseph A. McFalls, Jr., and Marguerite Harvey McFalls, *Disease and Fertility* (New York: Academic Press, 1984).
14. Population Reference Bureau, *1984 World Population Data Sheet.*
15. United Nations, Population Division, Estimates and Projections Section, *Demographic Indicators by Countries as Assessed in 1982*, New York, December 14, 1983, computer printout.
16. Adepoju, Aderanti, "Population Growth and Urbanization," paper presented at the Niser/Battelle Symposium on Population and Development Policy in Nigeria, University of Ibadan, July 1982, Table 4; Ministry of Economic Planning and Land Matters, Lagos State Secretariat, *Lagos State Interim Regional Plan: 1980-2000* (Lagos: 1980) p. 8.
17. Zachariah, K. C., Julien Conde, et al., *Demographic Aspects of Migration in West Africa*, Vol. 1, World Bank Staff Working Paper No. 414 (Washington, DC: World Bank, 1980) pp. IC1-IC3, UV3.
18. "Nigeria's Outcasts: The Cruel Exodus," *Newsweek*, February 14, 1983, pp. 32-34.
19. Yeager, Rodger, "Demography and Development Policy in Tanzania," *The Journal of Developing Areas*, Vol. 16 (July 1982) pp. 500-503.
20. Bisson, Darlene Ferguson, *Demographic Factors and Population Activities in West/Central Africa* (Abidjan, Ivory Coast: U.S. Agency for International Development, 1983) p. 20.
21. World Bank, *WDR 1984*, Table 19, p. 254.
22. *Ibid.*

23. Brown, *State of the World 1985,* p. 9-11.
24. Van Rensburg, N. J. and C. J. Jooste, "A Population Policy: The Perspective for Population Control," in N. J. Van Rensburg (ed.), *Population Explosion in Southern Africa* (Pretoria: Van Schaik, 1972) p. 94.
25. U.N. Food and Agriculture Organization, *Brief on the 1984-85 Cereal Import and Food Aid Needs for 21 African Countries* (Rome: December 5, 1984).
26. Meerman, Jacob and Susan Hill Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," *Finance and Development,* Vol. 19, No. 3 (September 1982) p. 14; World Bank, *Toward Sustained Development in Sub-Saharan Africa,* p. 1.
27. U.S. Department of Agriculture, Economic Research Service, *Food Problems and Prospects in Sub-Saharan Africa: The Decade of the 1980's* (Washington, DC: 1981) p. 1.
28. Meerman and Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," p. 15.
29. U.S. Department of Agriculture, *Food Problems and Prospects in Sub-Saharan Africa,* p. 156; Ramgopal Agarwala, *Price Distortions and Growth in Developing Countries,* World Bank Staff Working Paper No. 575 (Washington, DC: World Bank, 1983) Table 3.
30. Harden, Blaine, "Farm Policies Seen as Famine Factor: Specialists Say Ethiopian Practices Sap Peasants' Incentive," *The Washington Post,* December 31, 1984, p. A9; "How to Grow a Famine," *The Economist,* December 22, 1984, p. 27.
31. Meerman and Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," pp. 14-15.
32. Faruqee, Rashid and Ravi Gulhati, *Rapid Population Growth in Sub-Saharan Africa: Issues and Policies,* World Bank Staff Working Paper No. 559 (Washington, DC: World Bank, 1983) pp. 29-31.
33. Meerman and Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," p. 15; Christopher Matthews, "To Feed Africa, Make Small Farmers Rich," *The Washington Post,* December 30, 1984, p. C1.
34. World Bank, *Accelerated Development Sub-Saharan Africa: An Agenda for Action* (Washington, DC: 1981) pp. 45-46.
35. Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* p. 27.
36. Sai, "The Population Factor in Africa's Development Dilemma," p. 803; Glenn Frankel, "Shortage of Firewood Reaching Crisis Level in the Third World," *The Washington Post,* December 6, 1984, p. E1.
37. World Bank, *Accelerated Development in Sub-Saharan Africa,* p. 100.
38. Frankel, "Shortage of Firewood Reaching Crisis Level in the Third World," p. E2; Glenn Frankel, "Africa: The Huge Continent," *The Washington Post,* November 19, 1984, p. A18; Professor M. A. Schweppenhauser, Department of Crop Science, University of Zimbabwe, November 1984, personal communication.
39. Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* p. 39.
40. See, for example, Burundi, Commission Nationale Permanente du Plan, *Plan Quinquennial de Developpement Economique et Social du Burundi, 1978-1982,* Annexe 4 (Bujumbura: 1978).
41. Economic Commission for Africa (ECA), *ECA and Africa's Development, 1983-2008: A Preliminary Perspective Study* (Addis Ababa: 1983) p. 24.
42. Henin, Roushdi A., "Characteristics and Development Implications of a Fast-Growing Population," in Tony Killick (ed.), *Papers on the Kenyan Economy* (Nairobi: Heinemann, 1981) p. 206.
43. Lockhart, Lawrence, "The Economics of Nine Years of Education for All," in Killick, *Papers on the Kenyan Economy,* p. 281.
44. The Futures Group, *Kenya: The Effects of Population Factors on Development* (Washington: DC: 1982) pp. 75-76.
45. Government of Zimbabwe, Ministry of Labour, Manpower Planning and Social Welfare, *Annual Review of Manpower 1983,* Vol. 1 (Harare: 1983) p. 2.
46. Mabogunje and Arowolo, *Social Science Research on Population and Development in Africa South of the Sahara,* pp. 22-23.
47. World Fertility Survey staff, London, November 1984, personal communication.
48. World Bank, *Accelerated Development in Sub-Saharan African Africa,* p. 81.
49. Bisson, *Demographic Factors and Population Activities in West/Central Africa,* p. 20.

50. Sai, "The Population Factor in Africa's Development Dilemma," p. 802; World Bank, *Toward Sustained Development in Sub-Saharan Africa,* p. 1.
51. Sai, "The Population Factor in Africa's Development Dilemma," p. 802.
52. World Bank, *WDR 1984,* Table 25, p. 266.
53. See, for example, Susan Hill Cochrane, *Fertility and Education: What Do We Really Know?* (Baltimore: The Johns Hopkins University Press, 1979).
54. World Bank, *WDR 1984,* Table 25, p. 266.
55. Caldwell, John C., "Mass Education as a Determinant of the Timing of Fertility Decline," *Population and Development Review,* Vol. 6, No. 2 (June 1980) p. 229.
56. World Bank, *Toward Sustained Development in Sub-Saharan Africa,* Table 26, p. 83; United Nations Children's Fund (UNICEF), *The State of the World's Children 1984* (London: Oxford University Press, 1983) Figure 3.3, p. 107.
57. World Bank, *Accelerated Development in Sub-Saharan Africa,* p. 87.
58. Sai, "The Population Factor in Africa's Development Dilemma," p. 804.
59. UNICEF, *The State of the World's Children 1985* (London: Oxford University Press, 1984).
60. World Bank, *Accelerated Development in Sub-Saharan Africa,* p. 264.
61. *Ibid.,* p. 87.
62. Oyeneye, O. Y., "Population Growth and Health Planning in Nigeria," in I. O. Orubuloye and O. Y. Oyeneye (eds.), *Population and Development in Nigeria* (Ibadan, Nigeria: Nigerian Institute of Social and Economic Research, 1982) pp. 88-89.
63. Maine, Deborah, *Family Planning: Its Impact on the Health of Women and Children* (New York: Center for Population and Family Health, Columbia University, 1981).
64. Goliber, Thomas J. et al., *Demographic Change and Educational Planning in Developing Countries* (Washington, DC: The Futures Group, 1983) pp. 33-38.
65. ECA, *Report of the Second African Population Conference* (Addis Ababa: 1984) p. 11.
66. The Futures Group, *Kenya: The Effects of Population Factors on Development,* pp. 98-100.
67. Mabogunje and Arowolo, *Social Science Research on Population and Development in Africa South of the Sahara,* p. 41.
68. *Ibid.,* p. 40.
69. UNICEF, *State of the World's Children 1985,* p. 76.
70. World Bank, *WDR 1984,* Table 5, p. 198.
71. Bisson, *Demographic Factors and Population Activities in West/Central Africa,* pp. 28-29.
72. Ware, Helen, *Population and Development in Africa South of the Sahara: A Review of the Literature, 1970-1978* (Mexico City: International Review Group of Social Science Research on Population and Development, El Colegio de Mexico, 1978) p. 76.
73. Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* pp. 50-51.
74. World Bank, *WDR 1984,* Table 5, p. 198, and Table 20, pp. 256-257.
75. *Ibid.,* p. 52.
76. *Ibid.,* p. 8; Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* p. 51.
77. Mott, Frank L. and Susan H. Mott, "Kenya's Record Population Growth: A Dilemma of Development," *Population Bulletin,* Vol. 35, No. 3 (October 1980) p. 7.
78. Bisson, *Demographic Factors and Population Activities in West/Central Africa,* p. 28.
79. *Ibid.,* p. 28.
80. Mott and Mott, "Kenya's Record Population Growth," p. 6.
81. Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* p. 48.
82. United Nations Fund for Population Activities, *Population Profiles: Africa* (New York: 1983) p. 6.
83. Kamarck, Andrew M., *The Economics of African Development* (New York: Praeger, 1971) p. 14.
84. World Bank, *WDR 1984,* pp. 56-70, 106-107, 183.
85. *Ibid.,* pp. 36-37.
86. *Ibid.,* pp. 184-185.
87. Dumont, Rene, personal communication.
88. Faruqee and Gulhati, *Rapid Population Growth in Sub-Saharan Africa,* p. 61.
89. World Bank, *WDR 1984,* p. 163.
90. Kamarck, *The Economics of African Development,* p. 26.
91. United Nations, Population Division, *Demographic Indicators by Country as Assessed in 1982.*

92. World Bank, *WDR 1984*, pp. 79-80.
93. ECA, *ECA and Africa's Development, 1983-2008*, p. 17.
94. Kamarck, *The Economics of African Development*, p. 79.
95. World Bank, *WDR 1984*, p. 61; Ware, *Population and Development in Africa South of the Sahara*, pp. 4-5.
96. Caldwell, John C., "Family Planning in Continental Sub-Saharan Africa," in T. E. Smith (ed.), *The Politics of Family Planning in the Third World* (London: Allen and Unwin, 1973) pp. 55-56.
97. Warwick, Donald P., *Bitter Pills: Population Policies and Their Implementation in Eight Developing Countries* (London: Cambridge University Press, 1982) pp. 12-14.
98. International Planned Parenthood Federation (IPPF), Policy Analysis Unit, *Fertility and Family Planning: A 1984 People Wall Chart* (London: 1984); Stephen L. Isaacs and Rebecca J. Cook, "Laws and Policies Affecting Fertility: A Decade of Change," *Population Reports*, Series E, No. 7 (Baltimore: Population Information Program, The Johns Hopkins University, November 1984) Table 1, p. 111; United Nations, *World Population Trends and Policies: 1983 Monitoring Report*, Parts 2 and 3 (New York: December 1983) pp. 773, 780.
99. ECA, *Second African Population Conference*, Annex I, p. 2; United Nations, *1983 Monitoring Report*, Parts 2 and 3, p. 776.
100. ECA, *Kilimanjaro Programme of Action on Population* (Addis Ababa: 1984) pp. 4, 11.
101. "What the World Said," *People*, Vol. 11, No. 4 (1984) p. 14.
102. IPPF, *Fertility and Family Planning: A 1984 People Wall Chart*.
103. *Ibid.*; Isaacs and Cook, "Laws and Policies Affecting Fertility," p. 122.
104. *Ibid.*, p. 137; United Nations, *1983 Monitoring Report*, Parts 2 and 2, p. 775.
105. ECA, *Second African Population Conference*, Annex II, p. 8.
106. Sai, "The Population Factor in Africa's Development Dilemma," p. 805.
107. ECA, *ECA and Africa's Development, 1983-2008*, pp. 93-94.

Selected Bibliography

The author of this *Population Bulletin* suggests the following for those interested in reading more about population and development issues in sub-Saharan Africa.

Caldwell, John C., "Family Planning in Continental Sub-Saharan Africa," in T. E. Smith (ed.), *The Politics of Family Planning in the Third World* (London: Allen and Unwin, 1973) pp. 50-66.

——, "Mass Education as a Determinant of the Timing of Fertility Decline," *Population and Development Review*, Vol. 6, No. 2 (June 1980) pp. 225-256.

Cantrell, Pierre et al., *Population in African Development* (Dolhain, Belgium: Ordina, 1974).

Economic Commission for Africa, *Kilimanjaro Programme of Action on Population*, Second African Population Conference, Arusha, United Republic of Tanzania, January 9-13, 1984 (Addis Ababa: 1984).

——, *Fifth Population Inquiry Among Governments: ECA Member States' Perceptions and Policies on Demographic Trends in Relation to Development as of 1982* (Addis Ababa: 1984).

Faruqee, Rashid and Ravi Gulhati, *Rapid Population Growth in Sub-Saharan Africa: Issues and Policies*, World Bank Staff Working Paper Number 559 (Washington, DC: World Bank, 1983).

Kamarck, Andrew M., *The Economics of African Development* (New York: Praeger, 1971).

Mabogunje, Akin L. and Oladele O. Arowolo, *Social Science Research on Population and Development in Africa South of the Sahara*, Appendix 7 (Mexico City: International Review Group of Social Science Research on Population and Development, El Colegio de Mexico, 1978).

Meerman, Jacob and Susan Hill Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," *Finance and Development,* Vol. 19, No. 3 (September 1982) pp. 12-17.

Mott, Frank L. and Susan H. Mott, "Kenya's Record Population Growth: A Dilemma of Development," *Population Bulletin,* Vol. 35, No. 3 (October 1980).

Ominde, S. H. and C. N. Ejiogu (eds.), *Population Growth and Economic Development in Africa* (London: Heinemann, 1972).

Sai, Fred T., "The Population Factor in Africa's Development Dilemma," *Science,* Vol. 226 (November 16, 1984) pp. 801-805.

U.S. Department of Agriculture, Economic Research Service, *Food Problems and Prospects in Sub-Saharan Africa: The Decade of the 1980's,* Foreign Agricultural Economic Report No. 166 (Washington, DC: 1981).

Van Rensburg, N. J. (ed.), *Population Explosion in Southern Africa,* from a symposium, Pretoria, October 1971 (Pretoria: Schaik, 1972).

Ware, Helen, *Population and Development in Africa South of the Sahara: A Review of the Literature, 1970-1978* (Mexico City: International Review Group of Social Science Research on Population and Development, El Colegio de Mexico, 1978).

Warwick, Donald P., *Bitter Pills: Population Policies and Their Implementation in Eight Developing Countries* (London: Cambridge University Press, 1982).

World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action* (Washington, DC: 1981).

____, *Toward Sustained Development in Sub-Saharan Africa: A Joint Program of Action* (Washington, DC: 1984).

____, *World Development Report 1984* (New York: Oxford University Press, 1984).

Yeager, Rodger, "Demography and Development Policy in Tanzania," *The Journal of Developing Areas,* Vol. 16 (July 1982) pp. 489-510.

Recent Population Bulletins and Bulletin Slides

Population Bulletin prices, *prepaid,* are:
Single Copy—$4.00
Bulk copies:

2-10	$3.00 each
11-50	$2.50 each
51 or more	$2.00 each

Sets of 35 mm colored slides for figures and tables appearing in each *Bulletin* are available at the **additional** prices shown in parentheses.

Note: *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of Bulletins and slides ordered to cover postage and handling.

Volume 36 (1981-82)

No. 1 *Cuba: The Demography of Revolution,* by Sergio Diaz-Briquets and Lisandro Perez (14 slides, including frontispiece map, $7.00)

No. 2 *U.S. Women at Work,* by Linda J. Waite (13 slides, $6.50)

No. 3 *World Food Resources and Population: The Narrowing Margin,* by Lester R. Brown (16 slides, $8.00)

No. 4 *India's Population: Second and Growing,* by Pravin Visaria and Leela Visaria (19 slides, including map, $9.50)

No. 5 *The Changing U.S. Farmland Scene,* by Michael Brewer (12 slides, $6.00)

No. 6 *Eastern Europe: Pronatalist Policies and Private Behavior,* by Henry P. David (16 slides, including map, $8.00)

Volume 37 (1982)

No. 1 *The World Fertility Survey: Charting Global Childbearing,* by Robert Lightbourne Jr. and Susheela Singh, with Cynthia P. Green (21 slides, including map, $10.50)

No. 2 *U.S. Population: Where We Are; Where We're Going,* by Population Reference Bureau staff and guest experts (27 slides, $13.50)

No. 3 *The Soviet Union: Population Trends and Dilemmas,* by Murray Feshbach (22 slides, including map, $11.00)

No. 4 *Black America in the 1980s,* by John Reid (20 slides, $10.00)

Volume 38 (1983)

No. 1 *Third World Family Planning Programs: Measuring the Costs,* by Nancy Yinger, Richard Osborn, David Salkever, and Ismail Sirageldin (13 slides, $6.50)

No. 2 *China: Demographic Billionaire,* by H. Yuan Tien (17 slides, including map, $8.50)

No. 3 *U.S. Hispanics: Changing the Face of America,* by Cary Davis, Carl Haub, and JoAnne Willette (21 slides, including frontispiece map, $10.50)

No. 4 *The Changing American Family,* by Arland Thornton and Deborah Freedman (12 slides, $6.00)

Volume 39 (1984)

No. 1 *Planet Earth 1984-2034: A Demographic Vision,* by Leon F. Bouvier (9 slides, $4.50)

No. 2 *Israel's Population: The Challenge of Pluralism,* by Dov Friedlander and Calvin Goldscheider (15 slides, including map, $7.50)

No. 3 *The Business of Demographics,* by Cheryl Russell

No. 4 *Delayed Childbearing in the U.S.: Facts and Fictions,* by Wendy H. Baldwin and Christine Winquist Nord (17 slides, $8.50)

No. 5 *Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III,* by William F. Pratt et al. (30 slides, $15.00)

Volume 40 (1985)

No. 1 *Sub-Saharan Africa: Population Pressures on Development,* by Thomas J. Goliber (17 slides, $8.50)

Send orders with checks to: Population Reference Bureau, Inc.
Circulation Department
P.O. Box 35012
Washington, D.C. 20013

Population Reference Bureau, Inc.

The PRB gathers, interprets, and disseminates information on the facts and implications of national and world population trends. Founded in 1929, it is a private, nonprofit educational organization that is supported by grants and contracts, individual and corporate contributions, memberships, and sales of publications. It consults with other groups in the United States and abroad, operates information and library services, and issues the publications described on the outside back cover. The PRB also assists the development of population education through formal and nonformal programs.

Officers

*Mildred Marcy, *Chair of the Board*
*Thomas W. Merrick, *President*
*Raymond H. Potvin, *Secretary of the Board*
*Bert T. Edwards, *Treasurer of the Board*

Trustees

Jodie T. Allen
Brent Ashabranner
*Michael P. Bentzen
*John C. Beyer
Norman E. Borlaug
Wallace Bowman
Michael F. Brewer
John H. Bryant
Marriner C. Eccles, Jr.
Melvyn J. Estrin
Joseph L. Fisher
Frederick G. Harmon
Jonathan Hawley
*Robert Jordan
Laura Olson
Martha Phillips
Jonas Edward Salk
Bennetta B. Washington

Robert P. Worrall, *President Emeritus*
Conrad Taeuber, *Chairman Emeritus and Demographic Consultant*

Advisory Committee

Samuel Baum
Calvin L. Beale
Donald J. Bogue
Lester R. Brown
Philander P. Claxton, Jr.
Caroline S. Cochran
Mercedes B. Concepcion
Douglas Ensminger
Philip M. Hauser
Carl A. Huether
Jose Ruben Jara
Sam Keeny
Richard K. Manoff
M. A. Sattar
Benjamin Viel
Sloan R. Wayland

*Members of the Executive Committee of the Board of Trustees

The Population Reference Bureau is a private, nonprofit educational organization, founded in 1929. PRB members regularly receive the most vital, up-to-date population information available from the authorities who write PRB's four annual POPULATION BULLETINS; from the lively coverage of the latest news and trends in the monthly news magazine POPULATION TODAY; and from the annually updated WORLD POPULATION DATA SHEET and UNITED STATES POPULATION DATA SHEET wall charts. Educator and library members also receive the population education newsletter INTERCHANGE, four times during the school year, accompanied twice a year by ready-to-use classroom materials.

PRB also publishes the POPULATION TRENDS AND PUBLIC POLICY series, POPULATION BULLETIN POLICY SUPPLEMENTS, four-page EXECUTIVE SUMMARIES outlining the policy implications of current U.S. population trends, and special publications such as the POPULATION HANDBOOK, the STATE DEMOGRAPHICS FOR MARKETING DATA SHEET, and the PRB OCCASIONAL SERIES: THE CARIBBEAN and THE MIDDLE EAST. Write for a listing and prices of publications in print.

For more information, PRB's Information Resource Center responds to population-related inquiries by mail, telephone, or in-person visit. PRB's Demographic Information Service Center (DISC) offers personalized, in-depth data and analyses for individual clients seeking professional interpretation of population trends.

Members of the Population Reference Bureau support an organization that is dedicated to the objective analysis and reporting of one of the world's most compelling concerns.

Population Reference Bureau, Inc.
2213 M Street N.W.
Washington, D.C. 20037
(202) 785-4664

R2750-231F

Population Bulletin

A publication of the Population
Reference Bureau, Inc.
Vol. 40, No. 2
April 1985

ISSN 0032-468X

Abstract—Issued to mark International Youth Year 1985, this *Bulletin* reviews the dimensions, problems, and programs being mounted worldwide to address the implications of adolescent fertility. Though teenage fertility rates are declining almost everywhere, like those of older women, there is growing concern over the adverse health, social, economic, and demographic effects of early childbearing. Illness and mortality rates are significantly higher for mothers under 20 and their infants than they are for older mothers. Early childbearing is likely to mean truncated education, lower future family income, and also larger completed family sizes, which, along with shorter time spans between generations, contribute to rapid population growth. Future world population growth will be particularly affected by teenage fertility in the developing countries, which contain 82 percent of the 245 million women aged 15-19 in 1985, with the number projected to rise another 75 million by 2020. In most developing countries early marriage and childbearing are still the norm and birth rates of women aged 15-19 are well above 100 per 1,000. (The rate is just 15 in China, the world's most populous country.) The range in developed countries is from 4 in Japan to 81 to Bulgaria. Abortion and out-of-wedlock childbearing are increasing among teenagers in many developed and fast-urbanizing developing countries. This reflects more and earlier premarital sexual activity, fostered by the lengthening gap between puberty and marriage, diminished parental and social controls, and increasing peer and media pressures to be sexually active. Though generally still controversial and inadequate, sex education in school and teenagers' access to birth control services are increasing. Programs tailored to reach teenagers in school, recreational centers, and at work with fertility-related information and services tied in with other activities important in adolescents' lives are most successful in overcoming unmarried teenagers' reluctance to use contraception and possible reliance on abortion, and can also help them understand the benefits of delayed sexual activity.

Editor: Jean van der Tak

Graphics: George Hager

The *Population Bulletin* is published four times a year and is distributed along with other publications listed on the back cover to members of the Population Reference Bureau. If you would like to order additional copies of this *Bulletin* or join the PRB if you are not already a member, write the Circulation Department, Population Reference Bureau, Inc., 2213 M Street N.W., Washington, DC 20037; Telephone: (202) 785-4664. Prices for the *Population Bulletin* are: $4.00 per single copy; bulk copies; 2-10, $3.00 each; 11-50, $2.50 each; 51 or more, $2.00 each. *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of *Bulletins* ordered to cover postage and handling. Annual rates for Population Reference Bureau membership *inside the United States* are: individuals, $30; educators, $20; associate educator members, $10; students, $10; libraries, $40; corporations and institutions, $200. *For all other countries,* the rates are: individuals, $37.50; educators, $25; associate educator members, $12.50; students, $12.50; libraries, $50; corporations and institutions, $250.

For information on other *Population Bulletins* and *Bulletin Slides,* see page 50.

The suggested citation, if you quote from this publication, is: Judith Senderowitz and John M. Paxman, "Adolescent Fertility: Worldwide Concerns," *Population Bulletin,* Vol. 40, No. 2 (Population Reference Bureau, Inc.: Washington, DC, 1985). The figures and tables from this *Population Bulletin* may be freely reproduced, provided credit is given to the Population Reference Bureau and a copy of the publication in which they appear is forwarded to the PRB.

The *Population Bulletin* is indexed in *GEO Abstracts, PAIS Bulletin, Population Index, Social Sciences Index,* and *Social Sciences Citation Index.* It is included in the coverage of *Current Contents/Social and Behavioral Sciences,* Biosciences Information Service of Biological Abstracts and the CICRED/UNFPA *Review of Population Reviews,* and is available on microfilm from University Microfilms International, 300 North Zeeb, Ann Arbor, MI 48106. Selected *Bulletins* are also included in the coverage of and available in microfiche through ERIC Systems.

Adolescent Fertility: Worldwide Concerns

By Judith Senderowitz and John M. Paxman

Page

Introduction 3

Patterns of Adolescent Reproductive Behavior 4

- Numbers of adolescents 6
- Premarital sexual activity 7
- Marriage patterns 7
- Age at first birth 12
- Fertility 13
- Out-of-wedlock childbearing 15
- Contraceptive use 15
- Abortion 17

Causes of Adolescent Fertility 19

Consequences of Adolescent Fertility 23

Laws and Policies Affecting Access to Information and Services 27

Programs Addressing Adolescent Sexuality and Fertility Regulation 33

Conclusion: Trends and Implications 42

References 45

Selected Bibliography 49

Figures

1. Adolescents Aged 10-19 in the Population Age Pyramids of Developing and Developed Countries: 1985, 2020 5
2. Females Aged 15-19: World, Developing and Developed Countries, 1985, 2000, 2020 6

Tables

1. Proportion of Adolescent Population Reported to Have Experienced Premarital Intercourse: Selected Countries 8
2. Adolescent Marriage and Fertility: Selected Countries, Latest Available Data 9
3. Trends in Percentages of Females Aged 15-19 Ever Married: Selected Countries 12
4. Trends in Median Age at First Birth: Selected Countries 12
5. Trends in Fertility Rates of Women Under 20 and Percent of Total Births to Women Under 20: Selected Countries 14
6. Percent of Currently Married Women Aged 15-19 and 15-49 Using Contraception: Selected Countries 15
7. Contraceptive Use Among Sexually Active Unmarried Adolescents: Selected Countries 16
8. Percent of Total Legal Abortions Obtained by Women Under 20 and Abortion Rates of Women Under 20 and 20-24: Selected Countries 18
9. Laws and Policies on Reproductive Health Education and Information for Adolescents: Selected Countries 28
10. Laws and Policies on Contraceptive-Related Health Care for Adolescents: Selected Countries 32
11. Laws and Policies on Abortion-Related Health Care for Adolescents: Selected Countries 34

Photo credits: APROFAM de Guatemala, 39; Carrie Boretz, 21; The Door, 40; Chantal Regnault/Liaison, 2; United Nations/John Isaac, 25; United Nations/Oddbjorn Monsen, 43.

POPULATION BULLETIN
Vol. 40, No. 2, April 1985

This young Haitian woman already has two children and is expecting another. Early childbearing is not new and actual fertility rates of women under 20 are declining almost everywhere. But new in the past decade or so are growing worldwide recognition of and concern over the adverse effects of adolescent fertility.

Adolescent Fertility: Worldwide Concerns

By **Judith Senderowitz** and **John M. Paxman**

Center for Population Options
Washington, DC

The Pathfinder Fund
Chestnut Hill, (Boston) Massachusetts

This Population Bulletin *on the dimensions, problems, and programs being mounted to address the implications of adolescent fertility is designed as a contribution to the 1985 International Youth Year, proclaimed by the United Nations in order to create widespread awareness of and improvement in the world situation of youth.*

Judith Senderowitz is founder and Executive Director of the Center for Population Options, a national organization which conducts research, policy analysis, and programs focused on issues related to adolescent pregnancy and fertility both in the United States and abroad. Ms. Senderowitz has also served as Executive Director of the Population Institute and national President of Zero Population Growth. She is coeditor of Pronatalism: The Myth of Mom and Apple Pie *and author of numerous articles on women and population, teenage pregnancy, and sexuality education. She holds the M.A. in Modern Social History from Columbia University.*

John Paxman, an attorney with the J.D. from the University of Virginia, is Chief of the Public Policy Division of The Pathfinder Fund and a member of the Board of Directors of the Center for Population Options. In his career focused on law and population policy he has also worked with the Law and Population Programme at the Fletcher School of Law and as consultant to the Law and Planned Parenthood Programme of the International Planned Parenthood Federation. He is coauthor of Adolescent Health and the Law, *to be published by the World Health Organization, and has written widely on the subject of adolescent fertility.*

For their help in the preparation of this Bulletin, *the authors are grateful to their colleagues Jodie Levin-Epstein and Daphne Weisbart of the Center for Population Options and Benjamin Gyepi-Garbrah of The Pathfinder Fund, and to Andrew Davidson and Katherine Darabi of Columbia University's Center for Population and Family Health, and Mary Kent, Tom Merrick, and Jean van der Tak of the Population Reference Bureau.*

Childbearing by women under age 20—adolescent fertility—is not a new phenomenon in world history. Historically, marriage has come early in most countries and childbearing was expected to follow soon after. This is still the norm in many developing countries where fertility rates of women under 20, though now declining, are still very high. In developed countries, adolescent fertility rates are much lower and declining in concert with the rates of older women, but there is concern with rising rates of abortion and out-of-wedlock births among teenage women.

What *is* new in the past decade or so is the growing recognition of and concern over the adverse health, social, economic and demographic effects of adolescent fertility. Rates of illness and mortality are significantly higher for teenage mothers and their infants than they are for older mothers. Early initiation of childbearing is likely to mean truncated education, lower future family income, and also larger completed family sizes, which, along with shorter time spans between generations, contribute to rapid population growth. Demographically, the impact of childbearing among women under 20 in developing nations is further heightened by the large numbers and proportions of young people aged 10-19 in these nations, now and in the future, due to past high fertility. Even if fertility rates were to drop precipitously among adolescent women in developing nations, their sheer numbers mean that their fertility will continue to have a major impact on world population growth for some time to come.

The International Population Conference of August 1984 in Mexico City addressed the issue of teenage pregnancy and childbearing in four of the 88 Recommendations endorsed by delegates of the 147 nations represented at the conference. Government policies are advised to "encourage delay in the commencement of childbearing" and to "raise the age of entry into marriage" (Recommendations 7 and 8). Another recommendation encourages "community education to change prevailing attitudes which countenance pregnancy and childbearing at young ages, recognizing that pregnancy occurring in adolescent girls, whether married or unmarried, has adverse effects on the morbidity and mortality of both mother and child" (Recommendation 18). And a fourth recommendation urges governments "to ensure that adolescents, both boys and girls, receive adequate education, including family-life and sex education . . . and suitable family planning information and services" (Recommendation 29).

The designation by the United Nations of 1985 as International Youth Year is an added incentive to focus on the dimensions and problems of adolescent fertility as among the important issues to be addressed in the Year's objective of improving the world situation of youth. Toward that end, this *Bulletin* explores the following questions. What are the current and projected numbers of adolescents worldwide? What are the patterns of their fertility-related behavior: premarital sexual intercourse, age at marriage and first birth, and levels of fertility, contraceptive use, and abortion practice? How do laws and policies help or hinder efforts to meet the reproductive health needs of adolescents? And what programs are being mounted worldwide to address the implications of all this?

We begin with defining adolescence.

Definition of adolescence

Adolescence is said to be the process through which an individual makes the transition from childhood to adulthood. Most cultures relate the beginning of this process to the onset of puberty, but differ widely over when it ends, as described by James Chui:

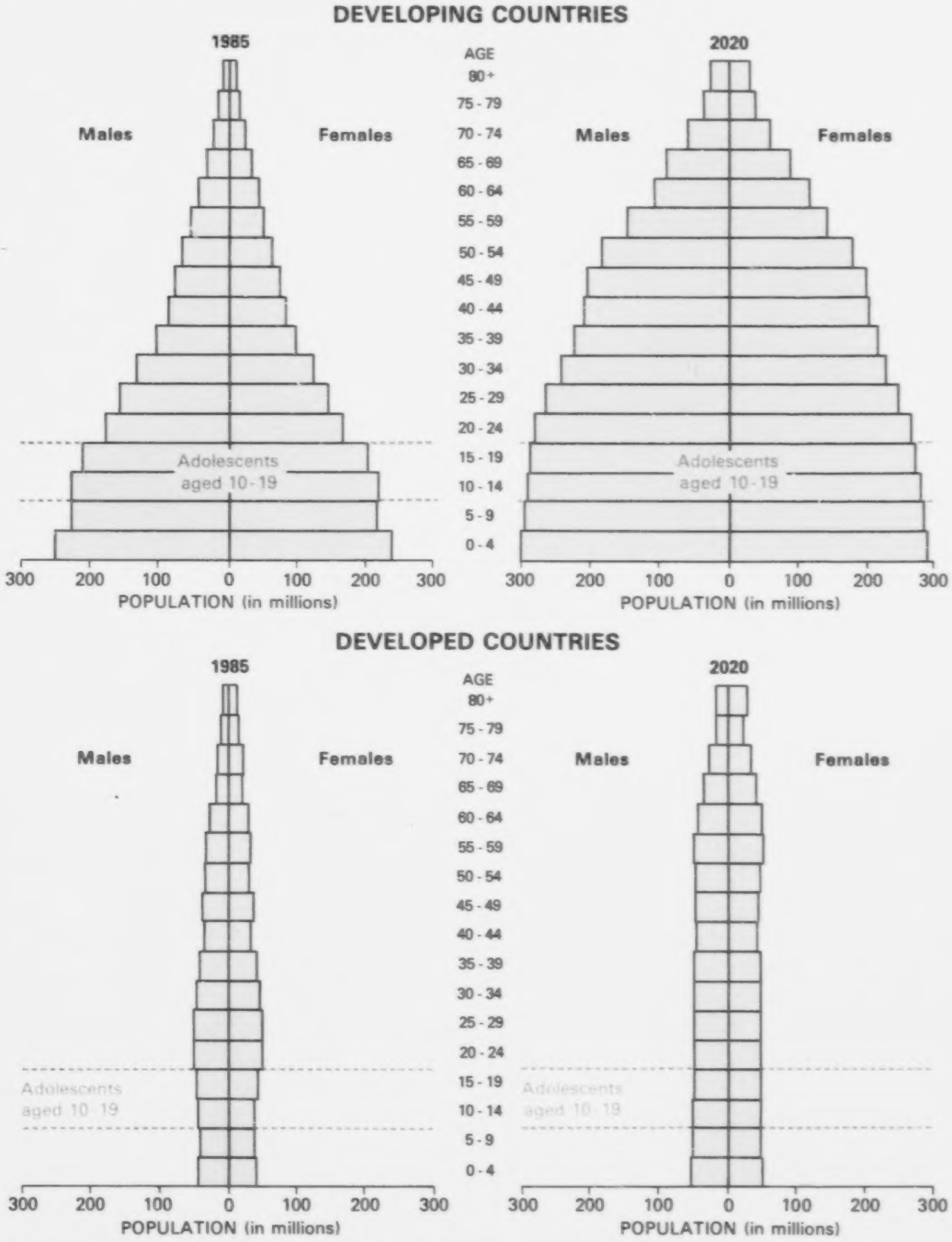
> "In many developing countries, especially in rural and underdeveloped areas, a girl is often considered to be an adult at the time when menstruation is established regularly. They tend to marry early and do not go to school. The transition from childhood to adulthood in such cases is quick, and the notion of adolescence does not exist. On the other hand, in developed countries and increasingly in urban areas of developing countries where rapid social changes are taking place with modernization, young people go to school and tend to marry late. There is a long transition from childhood to adulthood, and the notion of adolescence emerges. There is thus a continuum between quick and slow transition in different societies."[1]

These variations make it difficult to define adolescence in specific universal terms. But in dealing with the issue of early childbearing, it is most useful to adopt the age limits of 10-20 suggested by a World Health Organization Committee on the Health Problems of Adolescence.[2] To pinpoint the problems, where data are available, social scientists and medical researchers often prefer to distinguish early adolescence (ages 10-14) from late adolescence (ages 15-19). The age-related data presented in this *Bulletin*, the most widely available for adolescent fertility-related behavior, generally refer to women aged 15-19, but the issues discussed apply to males too and span the age range from 10 to 19. This overlaps the age range of 15 to 24 which is the focus of International Youth Year.

Patterns of Adolescent Reproductive Behavior

The increase in numbers of adolescents and the patterns of their fertililty-related

Figure 1. Adolescents Aged 10-19 in the Population Age Pyramids of Developing and Developed Countries: 1985, 2020

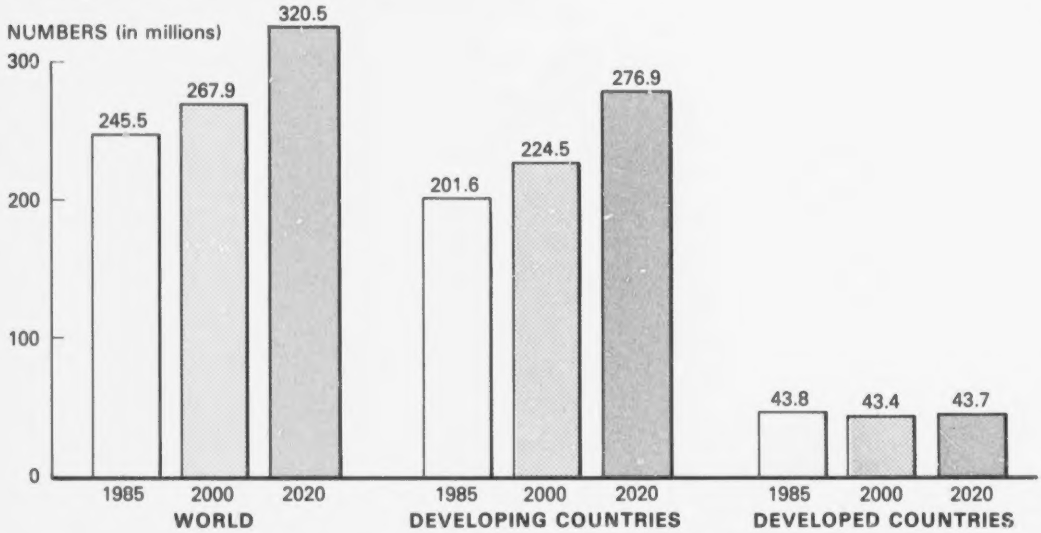


Source: United Nations, *World Population Prospects as Assessed in 1982*, medium variant, forthcoming.

Note: Developing countries = Africa, Asia (minus Japan), Latin America, and Oceania (minus Australia and New Zealand).
Developed countries = Europe, Canada, United States, U.S.S.R., Japan, Australia, New Zealand.

BEST AVAILABLE COPY

Figure 2. Females Aged 15-19: World, Developing and Developed Countries, 1985, 2000, 2020



Region and country	Number (in thousands)			Increase or decrease 1985-2020
	1985	2000	2020	
World	245,461	267,918	320,549	75,088
Developing countries	201,642	224,513	276,893	75,251
Africa	28,531	46,192	81,425	52,893
Asia[a]	151,605	150,741	163,477	11,872
Latin America	21,213	27,151	31,487	10,274
Other[b]	292	428	504	212
Developed countries	43,819	43,406	43,656	- 163
Europe	18,726	16,359	15,642	-3,084
Canada and United States	9,997	10,475	10,733	736
USSR	9,959	12,238	12,420	2,461
Australia and New Zealand	788	782	890	102
Japan	4,349	3,552	3,971	- 378

Source: United Nations, *World Population Prospects as Assessed in 1982*, medium variant.

[a] minus Japan. [b] Oceania, minus Australia and New Zealand.

behavior vary widely between the developing and developed regions, between countries within these regions, and between urban and rural areas and different cultures within countries.

Numbers of adolescents

According to the "medium variant" of assessments prepared in 1982 by the United Nations, there are just over a billion young people aged 10-19 in the world in 1985—526 million boys and 506 million girls. Eighty-three percent of these adolescents live in the developing countries, where they make up 23 percent of the total population (see Figure 1, page 5). In the developed countries as a whole, adolescents comprise 15 percent of the total population. By 2020, according to the U.N. medium projections, the world total of adolescents aged 10-19 will be over 1.3 billion, an increase of 27 percent in 35 years. Of these, 1.1 billion, or 86 percent, will live in the developing nations of Africa, Asia (minus Japan), and Latin America.

Still more important indicators of potential fertility in the coming decades are the increases in numbers of women in the early reproductive ages of 15-19. Worldwide, there are an estimated quarter of a billion (245 million) women aged 15-19 in 1985 (see bottom of Figure 2). Eighty-two percent live in the developing countries and three-quarters of those are to be found in Asia. By 2020 the world figure is likely to be more than 320 million.

The absolute numbers are projected to decline slightly in developed countries as a whole by 2020; in the developing countries they will increase by 75 million. In Africa the number of females aged 15-19 will nearly triple between 1985 and 2020; in Latin America it will increase by 50 percent.

Premarital sexual activity

Adolescents who are married or living in consensual unions can be assumed to be sexually active. Knowledge about the extent of premarital intercourse is limited and comes primarily from surveys of varying reliability in developed countries, which makes generalizations questionable. Nevertheless, U.S. pediatrics professor Adele Hofmann concludes that "the evidence strongly suggests that a substantial proportion of unmarried young people in many countries are sexually active" in her review of the findings shown in Table 1 (page 8), to which we have added data from the two most relevant recent surveys in the United States.

The figures vary between countries and between the sexes. Males are more active than females and the percentages of adolescents who have had premarital sexual intercourse go up with age. In Australia by age 20, 58 percent of males and 47 percent of females have experienced premarital intercourse. In metropolitan areas of the United States in 1979, the reported figures by age 19 were 77 percent for males and 69 percent for females. In Kenya, 80 percent of males have had premarital intercourse by age 19, according to a survey reported in 1974. There are also variations between cultures within countries. Among 19-year-old never-married women interviewed in 1982 in the U.S., 81 percent of black women compared to 63 percent of white women reported that they had had intercourse.

The overall reported percentages are low in Japan (15 percent of males and 7 percent of females aged 16-21) and in South Korea (17 percent of males and 4 percent of females aged 12-21) compared to those reported for the U.S. in 1979—70 percent of males aged 17-21 and 50 percent of females aged 15-19. But Nigerian figures reported in 1982 are comparable to those of the U.S.—68 percent of males and 43 percent of females among high school students aged 14-19.

Marriage patterns

Although premarital sexual activity is evidently common, most teenage fertility, particularly in developing countries, occurs within marriage or sanctioned consensual unions, which are common in Latin America and many sub-Saharan African nations. Historically, high proportions of married teenage women and low ages at marriage have been associated with high rates of adolescent fertility.

In sub-Saharan Africa, the latest available data show proportions of women aged 15-19 who have ever been married or lived in consensual unions ranging from one-third to as high as 61 percent in Ethiopia and Mauritania (see Table 2, page 9). Mean ages at first marriage (or entry into consensual union) generally range from 16 to 18. In North Africa, by contrast, the proportion ever-married is lower, 22 percent, and mean age at marriage higher, 21, in Egypt and Morocco. In Tunisia, where a concerted effort has been made to raise the age at marriage, just 5 percent of women 15-19 were married in 1981 and the median age at first marriage was a high 24.

Asia has the widest variation. Bangladesh has the highest known proportion of married 15-19 year-old women (70 percent) and the lowest mean age at marriage (11.6) in the world. Proportions

Table 1. Proportion of Adolescent Population Reported to Have Experienced Premarital Intercourse: Selected Countries

Country	Year of report or survey	Sample	Age range	Sexually experienced (%)		
				Both sexes	Males	Females
Australia	1980	Student surveys	15-16	47	—	—
			By age 20	—	58	47
Austria	1977	516 students	15-17	25	—	—
England	1976	Random sample of 1,500 students	By age 16	20	—	—
			By age 19	50	—	—
Europe (9 countries)	1980	General estimate	By age 18	—	50	33
France	1978	General estimate	By age 17	35	—	—
Germany, West	1973	600 students	By age 16	—	35	30
Israel	1978	National survey of 4,976 students	14-19	—	42	11
Japan	1976	Random survey of 5,000 students	16-21	—	15	7
Kenya	1974	Male students	By age 19	—	80	—
Korea, South	1980	Student survey	12-21	—	17	4
			12-14	—	10	2
Nigeria	1982	240 high school students	14-19	—	68	43
Norway	1978	355 adolescents	By age 19:			
			Christians	57	—	—
			Non-Christians	72	—	—
Sweden	1980	181 students	Median age, 16	39	—	—
United States	1979	1,717 females, 917 males in national survey of metropolitan areas	17-21	—	70	—
			15-19	—	—	50
			By age 19	—	77	69
	1982	1,742 never-married women 15-19 in national fertility survey	15-19	—	—	43
			By age 16	—	—	29
			White females	—	—	27
			Black females	—	—	41
			By age 19	—	—	66
			White females	—	—	63
			Black females	—	—	81

Sources: United States, 1979: Melvin Zelnik and John F. Kantner, "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers: 1971-1979," *Family Planning Perspectives*, Vol. 12, No. 5 (September/October 1980) Tables 1 and 2, pp. 231, 233; United States, 1982: William Pratt, et al., "Findings from the National Survey of Family Growth, Cycle III," *Population Bulletin*, Vol. 39, No. 5 (December 1984) Table 2; all other: Adele D. Hofmann, "Contraception in Adolescence: A Review. 1: Psychosocial Aspects," *Bulletin of the World Health Organization*, Vol. 62, No. 1 (1984) Table 1, p. 153.

married are also high and age at marriage low in the populous countries of India (57 percent married), Indonesia (30 percent married, age at marriage 16.4), Nepal (59 percent and 16.0 years), and Pakistan (31 percent and 15.3 years). In the middle are countries like Thailand, with 16 percent ever-married and age at marriage averaging 19.7, and Turkey (22 percent and 17.6 years, respectively). The remaining Asian countries have very low proportions ever-married of women aged 15-19, ranging from the Philippines (14 percent) through Israel (6 percent) to just 4 percent in China, 2 percent in Singapore and South Korea, and 1 percent in Japan. Sri Lanka's average age of 25 at first marriage for women is the highest known figure among developing nations and is exceeded only by Japan's, 25.3 in 1981, which could be highest in the world. China's mean age at first marriage for women reached 23.0 in the late 1970s but dropped to 22.7 in 1981 with

Table 2. Adolescent Marriage and Fertility: Selected Countries, Latest Available Data

(Percent females 15-19 ever married, mean age at first marriage, total fertility rate, age-specific fertility rate age 15-19 and contribution to (percent of) total fertility rate)

Region and country	Year	Percent females 15-19 ever married[a]	Mean age at first marriage	Total fertility rate (TFR)[b]	Females aged 15-19: Age-specific fertility rate (Births per 1,000)	Females aged 15-19: ASFR 15-19 as percent of TFR
Africa						
Algeria	1977	—	—	7.4	97	7
Benin	1982	44	18.0	7.1	—	—
Botswana	1981	—	—	6.2	102	8
Burkina Faso	1974	54	—	7.2	124	9
Cameroon	1978	53	18.0	6.5	156	12
Egypt	1976	22	21.3	5.3	99	9
Ethiopia	1971	61 (1982)	—	5.8	163	14
Ghana	1980	31	19.0	6.5	136	11
Ivory Coast	1981	56	18.0	7.4	—	—
Kenya	1978	28	18.4	8.0	168	11
Lesotho	1977	31	18.1	5.9	102	9
Madagascar	1972	34	—	5.0	168	17
Malawi	1972	51 (1977)	—	6.7	132	10
Mauritania	1981	61	19.7	7.7	302	20
Morocco	1972	22 (1980)	21.0	6.9	66	5
Nigeria	1982	40	16.6	6.3	173	14
Senegal	1978	59	16.4	7.1	[illegible]	14
Sierra Leone	1973	—	15.7	6.2	[illegible]	17
Sudan (North)	1979	22	16.8	5.7	99	9
Tanzania	1973	19	—	6.3	153	12
Tunisia	1980	5	24.0[c]	5.3	35	3
Uganda	1969	50	—	6.9	172	13
Zambia	1974	—	—	6.7	137	10
Asia						
Afghanistan	1973	54 (1979)	—	7.7	137	9
Bangladesh	1976	70	11.6	5.9	253	21
China	1981	4 (1982)	22.7	2.6	15	3
India	1971	57	—	5.7	95	8
Indonesia	1976	30 (1980)	16.4	4.3	117	14
Iran	1976	34	—	6.3	134	11
Israel	1981	6	—	3.1	35	6
Japan	1981	1	25.3	1.7	4	1
Jordan	1976	19	16.7	7.2	110	8
Korea, South	1981	2	17.0	2.1	6	2
Kuwait	1976	29	—	6.1	108	9
Malaysia	1979	11 (1974)	17.0	3.9	37	5
Nepal	1976	59	16.0	6.2	133	11
Pakistan	1975	31	15.3	5.9	141	12
Philippines	1978	14 (1981)	20.7	5.1	49	5
Singapore	1981	2	—	1.7	12	4
Sri Lanka	1979	10	25.0	3.9	42	5
Syria	1978	23	19.1	7.5	117	8
Thailand	1975	16	19.7	4.3	65	8
Turkey	1978	22	17.6	4.3	97	11

(continued)

Table 2 (continued)

Region and country	Year	Percent females 15-19 ever married[a]	Mean age at first marriage	Total fertility rate (TFR)[b]	Females aged 15-19	
					Age-specific fertility rate (Births per 1,000)	ASFR 15-19 as percent of TFR
Latin America						
Bolivia	1975	17	—	6.8	77	6
Brazil	1976	18	—	4.3	58	7
Chile	1981	10	—	2.6	68	13
Colombia	1976	15	20.9	4.5	98	11
Costa Rica	1981	15 (1976)	21.8	3.7	100	14
Cuba	1979	30 (1970)	—	2.1	96	23
Dominican Republic	1975	28	18.8	5.4	116	11
Ecuador	1979	19	22.0	5.4	105	10
Guatemala	1977	28 (1973)	—	6.1	150	12
Guyana	1975	28	18.2	4.6	119	13
Haiti	1977	16	21.1	5.5	57	5
Honduras	1981	30	—	6.5	124	12
Jamaica	1976	27	20.4	4.6	133	15
Mexico	1979	19	19.4	4.6	104	11
Panama	1980	21	19.3 (1976)	3.6	112	16
Paraguay	1979	17	20.7	4.9	85	9
Peru	1981	14	20.3	5.4	103	10
Puerto Rico	1980	16 (1970)	—	2.7	78	14
Trinidad and Tobago	1977	20	18.2	3.1	69	11
Uruguay	1975	13	—	2.6	73	14
Venezuela	1977	20	19.5	4.3	93	11
North America						
Canada	1980	4	—	1.7	27	8
United States	1982	8	22.5[c]	1.8	53	15
Europe						
Austria	1980	4	—	1.7	35	10
Belgium	1978	7 (1970)	—	1.7	23	7
Bulgaria	1980	18 (1975)	—	2.1	81	19
Czechoslovakia	1981	8	—	2.1	49	12
Denmark	1981	1	—	1.4	14	5
England and Wales	1981	4	23.1	1.8	28	8
Finland	1981	2	—	1.7	17	5
France	1980	5	23.0 (1982)	2.0	18	5
Germany, East	1981	5	—	1.9	51	13
Germany, West	1981	3	—	1.4	14	5
Greece	1980	11 (1971)	—	2.2	53	12
Hungary	1981	14	—	1.9	63	17
Ireland	1979	3	—	3.2	23	4
Netherlands	1981	2	22.7 (1976)	1.6	9	3
Norway	1981	2	—	1.7	24	7
Poland	1981	4	—	2.2	32	7
Portugal	1979	7 (1973)	21.2	2.2	41	9
Romania	1981	16 (1977)	—	2.4	72	15
Spain	1978	5	—	2.5	27	5
Sweden	1981	1	24.9[c] (1978)	1.6	15	5
Switzerland	1981	3 (1970)	—	1.6	10	3
Yugoslavia	1979	16 (1971)	—	2.1	49	12

Region and country	Year	Percent females 15-19 ever married[a]	Mean age at first marriage	Total fertility rate (TFR)[b]	Females aged 15-19	
					Age-specific fertility rate (Births per 1,000)	ASFR 15-19 as percent of TFR
U.S.S.R.	1976	—	—	2.4	35	7
Oceania						
Australia	1981	7 (1976)	—	1.9	28	7
Fiji	1974	12	17.9	4.1	59	7
New Zealand	1980	7	—	2.1	39	9

Sources: Judith Banister, "An Analysis of Recent Data on the Population of China," *Population and Development Review*, Vol. 10, No. 2 (June 1984) pp. 241-271; Robert Lightbourne, Jr., and Susheela Singh, with Cynthia P. Green, "The World Fertility Survey: Charting Global Childbearing," *Population Bulletin*, Vol. 37, No. 1 (March 1982); United Nations, *Demographic Yearbook, Special Issue: Historical Supplement* and *1982* (New York: 1979, 1984); U.S. Bureau of the Census, *A Compilation of Age-Specific Fertility Rates for Developing Countries* (Washington, DC: 1979); World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984); and country data from World Fertility Survey and other sources.

[a] Ever-married includes consensual union.

[b] Total fertility rate = average number of children women would have (per woman) by age 49 if they bore children at the current age-specific rates of fertility.

[c] Median.

the passage of a new marriage law that invalidated the regulations of the 1970s that had mandated high minimum marriage ages.[3]

Marriage patterns in Latin America do not vary as widely. The proportions of adolescent women who are married or living in consensual unions are relatively moderate, ranging from 10 percent in Chile to 30 percent in Cuba, and age at marriage is relatively high—from 18 to 22.

Collectively, the developed countries of Canada and the U.S., Europe, and Australia and New Zealand, along with Japan, exhibit the lowest proportions of ever-married women aged 15-19. All are below 10 percent, except for Greece (11 percent) and Eastern European countries with pronatalist policies that encourage earlier marriage, like Bulgaria (18 percent), Hungary (14 percent), and Romania (16 percent). All of the average ages at first marriage listed in Table 2 for developed countries are above 20, such as the median of 22.5 for the U.S. in 1982.

Table 3 (page 12) gives an idea of trends over the past two decades in the proportions of women aged 15-19 who are married. Again the patterns are mixed. Substantial drops occurred in several of the developing nations shown: Egypt, Kenya, India, Indonesia, and the Philippines. Small declines were experienced in Senegal, Costa Rica, and Venezuela. In Pakistan the figure remained unchanged and in Brazil and Chile the percentage increased. Among developed countries, France's low percentage also increased, Hungary's was virtually unchanged, the figure dropped by half in the U.S.—from 16 percent in 1960 to 8 percent in 1982—and in Sweden, where nonmarital cohabitation among young people has increased rapidly since the early 1960s, the percentage of 15-19 year-old women who are married has dwindled to just 1 percent.

Despite the general decline in percentages of 15-19 year-old women who are married or living in consensual union, surveys of the mid-1970s conducted as part of the World Fertility Survey (WFS) in ten Asian countries and eight in Latin America suggest that marriage still occurs earlier in rural than in urban areas. The

Table 3. Trends in Percentages of Females Aged 15-19 Ever Married: Selected Countries

Region and country	Year	Percent of females 15-19 ever married
Africa		
Egypt	1960	34
	1976	22
Kenya	1969	36
	1978	28
Senegal	1960	63
	1978	59
Asia		
India	1961	70
	1971	57
Indonesia	1964	40
	1980	30
Pakistan	1968	31
	1981	31
Philippines	1960	13
	1978	7
Latin America		
Brazil	1950	15
	1980	18
Chile	1960	9
	1977	10
Costa Rica	1963	16
	1976	15
Venezuela	1964	24
	1977	20
Europe and United States		
France	1960	4
	1980	5
Hungary	1960	15
	1981	14
Sweden	1960	3
	1981	1
United States	1960	16
	1982	8

Sources: United Nations, *Demographic Yearbook, Special Issue: Historical Supplement*, and *1982*; Lightbourne, Singh and Green, "The World Fertility Survey."

percentages married were higher in rural than in urban areas, and often nearly twice as high, in all these countries, except for Guyana.[4]

Table 4. Trends in Median Age at First Birth: Selected Countries

(Median age at first birth of women aged 20-24 and 40-44 at time of World Fertility Survey (Asia and Latin America) and median age of all women having a first birth in the United States, 1960 and 1982)

		Median age at first birth	
Region and country	Survey year	Women age 20-24	Women age 40-44
Asia			
Bangladesh	1976	16.8	17.0
Indonesia	1976	19.8	19.5
Jordan	1976	20.9	19.6
Malaysia	1974	23.2	19.7
Nepal	1976	20.2	20.9
Pakistan	1975	19.8	17.9
Thailand	1975	22.8	21.8
Latin America			
Colombia	1976	21.7	21.4
Costa Rica	1976	22.0	21.2
Dominican Republic	1975	20.8	19.8
Guyana	1975	20.9	19.3
Jamaica	1976	19.1	20.7
Mexico	1977	21.1	20.3
Panama	1976	21.6	20.0
Peru	1978	22.7	20.9
United States	Median age of all women having a first birth		
	1982:	23.2	
	1960:	21.8	

Sources: Asia and Latin America: Anne R. Pebley, John B. Casterline, and James Trussell, "Age at First Birth in 19 Countries," *International Family Planning Perspectives*, Vol. 8, No. 1 (March 1982) Table 1, p. 4; United States: National Center for Health Statistics, Division of Vital Statistics, personal communication.

Age at first birth

Findings from some of the same WFS surveys indicate that median age at first birth varies considerably in Asia, from 16.8 in Bangladesh to 23.2 in Malaysia among women aged 20-24 at the time of the survey, and in Latin America only from 19.1 in Jamaica to 22.7 in Peru (see Table 4). Differences in the median between women aged 40-44 and those aged 20-24 at the time of the surveys suggest that in general young women are beginning childbearing slightly later than their mothers did in these developing regions, though not in Bangladesh, Nepal, and Jamaica.

In the U.S., the median age of all women having a first birth has risen from 21.8 in 1960 to 23.2 in 1982.

Fertility

Rates and levels of adolescent fertility, largely reflecting marriage patterns, also vary widely both between and within the developing and the developed worlds. Worldwide, age-specific fertility rates for women aged 15-19 range from as low as 4 births per 1,000 in Japan and 9 in the Netherlands in 1981 to 253 in Bangladesh in 1976 and 302 in Mauritania in 1981 (see Table 2, page 9). The rates of the developing nations are generally extremely high relative to the developed world. In sub-Saharan Africa virtually all the rates are well over 100. In Latin America, they are more moderate, with most in the low 100s or below. And the developing nations of Asia again display the greatest variation, from several, like Bangladesh, with rates far above 100, down to countries with rates far below the 53 of the U.S. in 1982, such as China (15 in 1981), South Korea (11 in 1974), and Singapore (12 in 1981).

Although the rates are collectively lowest in developed nations, in some, as in the U.S., they are relatively high: Greece (53), Italy (51), Portugal (41), and again in Eastern European countries, Bulgaria (81), Czechoslovakia (49), Hungary (63), Romania (72), and Yugoslavia (49). (In the U.S. in 1982, while the overall fertility rate for 15-19 year-olds was 53 births per 1,000 women, it varied from 45 for white women to 97 for black women.[5])

The last column of Table 2 shows the percentage that the age-specific fertility rate of 15-19 year-olds constitutes of each country's overall total fertility rate. (The total fertility rate indicates the average number of lifetime births per woman if all women were to bear children throughout their reproductive years, 15-49, at the same age-specific fertility rates of a given year.) In developing nations, the range is from just 1 percent in South Korea (in 1974) and 3 percent in both Tunisia (in 1980) and China (in 1981) to 23 percent in Cuba (in 1979). Among developed nations, Japan is again lowest at 1 percent and Bulgaria is highest at 19 percent.

Table 5 (page 14) illustrates recent trends in the fertility rates of adolescent women and the proportions of all live births accounted for by teenagers, building on a similar compilation of U.N. data by James Chui reported in 1978, which covered the period from the mid-1960s to the early 1970s. At that time, Chui noted "a general unmistakable trend of decrease in the overall fertility rate of women aged 15-19 in selected developing countries having relatively good statistics."[6] The updated data in Table 5 suggest that this decline continues. In all but Madagascar of the 16 developing nations shown, fertility for women aged 15-19 dropped between the 1960s and the late 1970s or early 1980s. Some of the declines were substantial. For example, South Korea's already modest fertility rate was reduced from 22 to 6 per 1,000 women aged 15-19 between 1966 and 1981, Malaysia's fell from 77 in 1965 to 37 in 1979, and in Cameroon, the rate was nearly halved, from 297 in 1965 to 156 in 1978.

Among developed countries, Japan's very low rate of just 4 per 1,000 has stabilized and the rates are increasing in the relatively less developed Southern European countries of Greece, Portugal, and Spain, a trend noted by demographers Charles Westoff, Gerard Calot, and Andrew Foster in a review of teenage fertility in developed nations during the 1970s.[7] But in all others, the rates are declining, even in Czechoslovakia and Hungary as of 1981, two of the Eastern European countries with rising rates of teenage fertility during the 1970s, according to the review by Westoff, Calot and Foster. These adolescent fertility declines parallel reductions in total fertility that have been occurring worldwide, except generally in sub-Saharan Africa.

The proportion of total births accounted for by teenagers has increased or remained unchanged in some countries where their fertility rates have declined: Israel, Chile, Cuba, Mexico, Panama, and Hungary. This is probably due

Table 5. Trends in Fertility Rates of Women Under 20 and Percent of Total Births to Women Under 20: Selected Countries

Region and country	Births per 1,000 women under 20		Percent of total births to women under 20	
	Latest data (year)	Previous data (year)	Latest data (year)	Previous data (year)
Africa				
Algeria	97 (1977)	123 (1965)	7 (1977)	13 (1965)
Cameroon	156 (1978)	297 (1965)	13 (1978)	26 (1965)
Egypt	—	—	9 (1980)	3 (1969)
Madagascar	168 (1978)	132 (1966)	17 (1978)	22 (1966)
Tunisia	35 (1980)	88 (1965)	3 (1980)	9 (1965)
Asia				
Indonesia	—	—	14 (1976)	13 (1964)
Israel	35 (1981)	44 (1975)	6 (1980)	7 (1975)
Japan	4 (1981)	4 (1976)	1 (1981)	1 (1976)
Korea, South	6 (1981)	22 (1966)	2 (1981)	—
Malaysia	37 (1979)	77 (1965)	7 (1979)	11 (1966)
Singapore	12 (1981)	26 (1970)	4 (1981)	5 (1976)
Sri Lanka	42 (1979)	50 (1968)	5 (1979)	7 (1968)
Latin America				
Chile	68 (1981)	84 (1960)	13 (1981)	12 (1966)
Colombia	—	—	11 (1976)	9 (1963)
Costa Rica	100 (1981)	115 (1960)	14 (1981)	20 (1973)
Cuba	96 (1979)	146 (1965)	23 (1979)	19 (1966)
Mexico	104 (1979)	112 (1960)	11 (1979)	11 (1964)
Panama	112 (1980)	150 (1960)	23 (1978)	13 (1970)
Venezuela	93 (1977)	138 (1961)	11 (1977)	14 (1963)
Europe and United States				
England and Wales	28 (1981)	32 (1976)	8 (1981)	10 (1976)
Czechoslovakia	49 (1981)	56 (1975)	—	—
France	18 (1980)	29 (1972)	5 (1980)	7 (1972)
Greece	53 (1980)	45 (1975)	—	—
Hungary	63 (1981)	75 (1976)	17 (1981)	14 (1968)
Italy	—	—	11 (1976)	9 (1967)
Portugal	41 (1979)	37 (1975)	—	—
Spain	27 (1978)	21 (1974)	5 (1978)	3 (1968)
Sweden	15 (1981)	25 (1976)	5 (1981)	11 (1967)
United States	53 (1982)	58 (1975)	14 (1982)	17 (1969)
Oceania				
Australia	28 (1981)	41 (1975)	7 (1981)	11 (1967)
New Zealand	39 (1980)	54 (1975)	9 (1980)	13 (1967)

Sources: James W. Chui, "Policies and Programmes on Adolescent Fertility: An Integrated Approach," United Nations Fund for Population Activities, New York, 1978, mimeo, using United Nations data; K. G. Edstrom, "Reproductive Health in Adolescence," in D. B. Jelliffe and E. F. Jelliffe (eds.), *Advances in International Maternal and Child Health*, Vol. 1 (London: Oxford University Press, 1981) p. 30; United Nations, *Demographic Yearbook, 1977* and *1982*; National Center for Health Statistics, "Advance Report of Final Natality Statistics, 1982," *Monthly Vital Statistics Report*, Vol. 33, No. 6, Supplement, September 1984.

to the rising numbers of teenage women, which would tend to increase the share of the births they have, even though the actual birth *rates* per adolescent woman are declining. But in most countries, developing and developed alike, the proportion of teenage births among all births is also declining.

There are many reasons for these declines in adolescent fertility, including rising ages at marriage, increased educational and economic opportunities for young women, changes in social customs, increased use of contraception, and, particularly among the unmarried, access to abortion.

Out-of-wedlock childbearing

While overall adolescent fertility rates have declined, the proportion of out-of-wedlock births among teenage women has apparently increased in both developed and developing countries, although data are scarce.[8] In the U.S. between 1970 and 1982, the proportion of all births to women aged 15-19 that occurred out of wedlock rose from 17 to 37 percent among white women and from 62 to 87 percent among black women. The proportion of total births to all women under 20 that were out-of-wedlock was 51 percent in the U.S. in 1982, 52 percent in England and Wales in the same year, and 38 percent in France in 1980.[9] Nonmarital adolescent childbearing is also common in the Caribbean and appears to be on the increase in other developing areas with increasing urbanization and delayed marriage.

In some cultures, premarital pregnancy and childbearing are acceptable, often leading to socially acceptable consensual unions. But elsewhere the trend is of concern because many of the significant health risks and social and economic disadvantages associated with teenage childbearing are particularly serious for unmarried teenagers.

Contraceptive use

Due primarily to the World Fertility Survey and a growing number of contraceptive prevalence surveys, much is now known about the contraceptive practice of adolescent women around the world, at least those that are married. Again there is great variety (see Table 6).

As might be expected, the percentages of married women aged 15-19 using contraception are highest in developed countries: over 70 percent in Belgium, Denmark, Portugal, and the United Kingdom, and 53 percent in both Hungary (in 1977) and the U.S. (in 1982). On average the proportions are lowest in Africa, where the concept of family planning, at least for limiting fertility, has yet to be fully accepted. Only Tunisia's figure is above 10 percent; the others range from less than 1 percent to 6.5 percent, in Ghana. In Asia, the figures range from less than 5 percent in Bangladesh, Nepal and Pakistan to 28 percent in Sri Lanka

Table 6. Percent of Currently Married Women Aged 15-19 and 15-49 Using Contraception: Selected Countries

Region and country	Survey year	Percent using contraception	
		Aged 15-19	Aged 15-49
Africa			
Cameroon	1978	2.0	3.1
Egypt	1980	5.3	31.9
Ghana	1979-80	6.5	12.4
Ivory Coast	1980-81	(.)	3.0
Kenya	1978	3.4	6.9
Lesotho	1977	(.)	7.0
Nigeria	1981-82	4.3	5.7
Senegal	1978	5.7	5.2
Sudan (North)	1979	5.8	6.4
Tunisia	1980	11.4	43.1
Asia			
Bangladesh	1979	4.9	12.1
Indonesia	1976	13.0	26.0
Jordan	1976	9.0	26.0
Korea, South	1979	10.8	50.2
Malaysia	1974	15.0	34.0
Nepal	1981	3.9	7.0
Pakistan	1975	(.)	6.0
Philippines	1978	16.0	36.0
Sri Lanka	1981-82	27.7	54.9
Syria	1978	12.5	29.5
Thailand	1981	29.0	56.5
Latin America			
Colombia	1980	24.7	48.5
Dominican Republic	1980	18.0	42.0
Ecuador	1979	20.7	33.5
El Salvador	1978	8.3	34.0
Guyana	1975	18.0	34.0
Hondoras	1981	8.3	26.9
Jamaica	1979	—	54.9
Mexico	1980	20.4	38.7
Panama	1979	28.9	61.0
Europe and United States			
Belgium[a]	1975-76	76.5	81.0
Denmark[b]	1975	79.8	75.0
Hungary[c]	1977	52.9	73.0
Portugal	1980	76.8	76.3
United Kingdom[d]	1976	72.6	75.0
United States[e]	1982	53.1	68.0

Sources: Reports from the World Fertility Survey and Contraceptive Prevalence Surveys; National Survey of Family Growth (United States), personal communication.

— = data not available.

(.) = less than 1 percent.

[a] Ages 16-44 only.

[b] Ages 18-44 only.

[c] Ages 15-39 only.

[d] Ages 16-49 only.

[e] Ages 15-44 only.

Table 7. Contraceptive Use Among Sexually Active Unmarried Adolescents: Selected Countries

Country	Year of report or survey	Sample	Findings
Australia	1980	Females attending a family planning clinic	At first intercourse, approximately 50% used no method; 40% condom, 10% withdrawal.
Austria	1977	129 male and female students	At first intercourse, 40-50% used no method. Of those using contraception, 84% used an unreliable method.
Brazil	1980	122 postpartum females	88% had never used contraception.
Canada	1980	486 females attending a family planning clinic	At first intercourse, 32% used no contraception, 39% condom, 27% withdrawal. 80% failed to use any method consistently.
England	1975	Males and females attending a general health clinic	49% were effective contraceptors; 17% used unreliable methods; 39% failed to use any method consistently.
	1974	122 females attending a family planning clinic	82% already experienced at first visit; 95% had had unprotected intercourse one or more times.
Germany, West	1973	106 male and 90 female students	70% regularly use contraception; 40-50% used pill, 20-30% condom.
Hungary	1979	397 females seeking abortion	75% never used any contraception.
India	1979	422 females seeking abortion	None had ever used any method.
Kenya	1974	Random sample of high school and university students	Few had ever used any method.
Nigeria	1982	959 males and 941 females aged 14-24	Of sexually active, 48% of males and 66% of females used contraception.
Norway	1978	125 males and 121 females	At first intercourse, 48% of males and 66% of females had used contraception.
Sweden	1980	71 male and female students	At first intercourse, approximately 33% used no method, 50% condom, 8% pill, 8% spermicides, 1% withdrawal. At last episode, 18% used no method, 35% condom, 42% pill, 1% withdrawal, 3% unsure if method used.
United States	1976	2,000 females aged 15-19 from national sample	25% never used contraception, 45% sometimes, 30% always. Of those using one or more methods, 59% used pill, 39% condom, 30% withdrawal, 23% douche, rhythm or "other", 10% spermicides, 5% IUD, 2% diaphragm.
	1982	1,888 females aged 15-19 (93% never-married) in national fertility survey	At first intercourse, 52% used no method; of those using contraception, 47% used the condom, 27% withdrawal, 17% pill. 22% of never-married currently using contraception. Of these, 62% use the pill, 22% condom.
Yugoslavia	1980	Females attending a youth counseling clinic	Little previous use; 83% started using contraception after clinic visit.

Sources: Nigeria: O. A. Lapido et al., *Sexual Behavior, Contraceptive Practice and Reproductive Health Among the Young Unmarried Population in Ibadan, Nigeria: Final Report* (Research Triangle Park, NC: Family Health International, 1983) pp. 30-38; United States, 1982: Pratt et al., "Findings from the National Survey of Family Growth, Cycle III," Table 6, and Christine A. Bachrach, "Contraceptive Practice Among American Women, 1973-1982," *Family Planning Perspectives*, Vol. 16, No. 6 (November/December 1984) Table 9, p. 258; all other: Hofmann, "Contraception in Adolescence," Table 2, pp. 154-155.

and 29 percent in Thailand. In Latin America, the percentages are near or above 20 percent except in El Salvador and Honduras (both 8 percent).

In all but Senegal, Denmark and Portugal, percentages of married women aged 15-19 using contraception are lower than the figures for all married women aged 15-49, often less than half as high. Part of the reason, of course, is that young married women usually are looking forward to having children and therefore are not using contraception, although more than half of them are doing so in the developed countries surveyed. It could also reflect both teenagers' lack of knowledge and fears about the safety of contraception and the pressures, social rewards and status derived from early childbearing in many countries.[10]

What little is known about contraceptive use among unmarried teenagers who are sexually active, again mostly from often small surveys in developed countries, indicates that their contraceptive behavior is inconsistent at best and often ineffective (see Table 7). Half of unmarried adolescent males and/or females surveyed in Australia, Austria, and the U.S. and one-third in Canada, Norway, and Sweden used no contraceptive method at first intercourse. Three-quarters of sexually active unmarried women surveyed in Hungary in 1979 and a quarter of those surveyed in the U.S. in 1976 never used contraception. Only 12 percent of young unmarried Brazilians who had had a birth had ever used contraception and none had used contraception of 422 unmarried pregnant Indian adolescents seeking an abortion.

Although some sexually active unmarried adolescents use contraception regularly—60 percent in one English survey, 70 percent in West Germany, 63 percent in Norway—in general contraceptive use is sporadic and often ineffective. Four out of five in Canada used contraceptives inconsistently; 95 percent in England had experienced unprotected intercourse one or more times. Among those who do use contraception, most use the pill or condom in West Germany, Norway, Sweden, and the U.S., but 84 percent in Austria in a small survey reported in 1977 and a quarter in a national survey in the U.S. in 1976 used unreliable methods.

Many factors explain these behavior patterns: inaccurate knowledge about the reproductive process and contraception, inaccessibility of services, personal, peer group and social pressures, adolescents' tendency not to plan ahead, etc.[11] These are discussed in more detail in the next section of the *Bulletin*.

Abortion

Among the most dramatic reflections of premarital sexual activity among adolescents are figures on abortion. Available data indicate that unmarried women account for the majority of abortions in most countries, whether legal or illegal, and many of these are teenagers.

Abortions obtained by women under 20 make up a substantial proportion of total abortions in the countries, mostly in the developed world, where the procedure is legal and widely available. Data compiled in 1983 by the late Christopher Tietze of the Population Council show the percentages of legal abortions obtained by teenage women ranging from 13 percent in France and West Germany through 18 percent in Denmark and Sweden to 28 percent in England and Wales and 30 percent in the U.S. (see Table 8, page 18). The percentages are low, however, in Czechoslovakia and India (both 6 percent), Japan (3 percent), Singapore (9 percent), and Tunisia (3 percent).[12] It should be noted also that legal abortion *rates* per 1,000 women under age 20 are lower than the rates for women aged 20-24 in all the countries shown in Table 8, except Norway.

Rates for teenage women in countries where abortion is legal rose steadily during the 1970s and only recently have begun to level off or decline. Writing in 1979, Tietze attributed the rise, among other factors, to "earlier maturation, changing patterns of sexual behavior,

Table 8. Percent of Total Legal Abortions Obtained by Women Under 20 and Abortion Rates of Women Under 20 and 20-24: Selected Countries

Country	Year	Percent of all abortions to women under 20	Country	Year	Abortion rates per 1,000 women	
					Under 20	Aged 20-24
Canada	1981	28	Canada	1981	16.3	18.0
Czechoslovakia	1981	6	Czechoslovakia	1980	10.8	37.2
Denmark	1981	18	Denmark	1980	20.9	30.1
England and Wales	1980	28	England and Wales	1980	17.7	19.5
Finland	1980	24	Finland	1980	19.4	19.7
France	1979	13	Germany, East	1976	16.9	26.2
Germany, East	1975	14	Hungary	1980	26.5	39.0
Germany, West	1981	13	Netherlands	1979	4.6	6.6
Hungary	1980	10	New Zealand	1981	11.0	15.5
Netherlands	1979	18	Norway	1981	23.3	21.8
New Zealand	1981	24	Sweden	1981	20.9	27.3
Norway	1981	26	United States	1980	44.4	51.4
Sweden	1981	18				
United States	1980	30				

Source: Christopher Tietze, *Induced Abortion: A World Review, 1983*, 5th edition (New York: The Population Council, 1983) Tables 5 and 7.

growing acceptance of abortion as an alternative to forced marriage or out-of-wedlock birth, liberalization of abortion laws and of the attitudes and practice of the medical profession."[13]

Abortion practice should be put in the larger context. In a review of teenage pregnancy in the U.S. during the 1970s, the Alan Guttmacher Institute estimated that over 40 percent of young American men and women aged 13-19 had had sexual intercourse and four-fifths of premarital teenage pregnancies were unintended. Recently, researchers at the National Center for Health Statistics estimated that of 1.1 million pregnancies among U.S. teenagers in 1981, 40 percent ended in abortion, 13 percent in miscarriage, and 47 percent ended in a live birth.[14]

Data are sketchy for most other countries where abortion is restricted to varying degrees. A recent survey in several Latin American cities estimated the proportion of total abortions accounted for by women under 20 as follows: Campinas, Brazil (12 percent), Santiago, Chile (13 percent), San Salvador, El Salvador (22 percent), Mexico City (11 percent), Lima, Peru (12 percent).[15] Women suffering from complications after abortion, usually illegal and clandestine, account for over 50 percent of emergency gynecological admissions to hospitals in many developing countries and adolescent women make up a disproportionate number of these admissions. Ninety percent of patients treated for complications of induced abortion over five years at the University of Lagos, Nigeria, were adolescent women; 60 percent were in a similar review of cases in Benin City, Nigeria. Studies in other African countries reveal similar statistics.[16]

Abortions performed by the unskilled increase the risk of death. A study of pregnancy-related deaths in Bangladesh in 1978-79 found that complications from clandestine abortions accounted for 26 percent of these deaths; 23 percent of pregnancy-related deaths were due to abortion among all women and 87 percent among unmarried women, most of whom were probably adolescents, since 71 percent of women in Bangladesh are married by age 19.[17]

In sum, as Chui suggests, the "problem" of adolescent fertility must be "seen as two sides of the same coin: 'mothers too soon' for the married and out-of-wedlock motherhood for the unmarried adolescent."[18] Yet, as wisely concluded by Columbia University researchers Katherine Darabi, Susan Philliber, and Allan Rosenfield, ". . . differences in marriage rates, sanctioned consensual unions, attitudes toward abortion, and the general acceptance of contraception for women of any age yield very different perceptions of whether teenage fertility is an accepted norm or a problem."[19]

Causes of Adolescent Fertility

While no generalizations about fertility can hold throughout the world, some patterns of adolescent sexual and reproductive behavior have similar features among diverse cultures. Many of these are in the direction of earlier and more: earlier onset of menstruation, earlier initiation of sexual activity, increased percentages of sexually active adolescents, increased period of adolescence, and increased abortion rates. Other factors, such as birth rates, present a mixed pattern. In most situations, however, there is a new concern for the causes and consequences of early childbearing.

Early childbearing is not a new historical phenomenon. However, dramatic cultural changes have combined with both biological factors and traditional influences to produce new—and stressful—conditions for adolescents in the latter half of the 20th century. Three main patterns of adolescent sexual behavior can be observed now: premarital sex (in developed countries and Latin America), early marriage (Africa and Asia), and premarital abstinence (China and Japan).

Earlier menarche and sexual activity

One biological factor common to earlier sexual activity and pregnancy is the reduced age at menarche reported in cultures as diverse as those in Africa, Asia and Europe. In England the average age at menarche decreased from 14 to 12.9 between 1900 and 1960. In Nigeria the average dropped from 14 in the 1960s to 12.3 among the higher socioeconomic groups and 13 among poorer groups by the late 1970s.[20] Menarche both renders a woman's body capable of conception and predisposes the individual to become sexually receptive.

That sexual activity is beginning earlier and a greater proportion of young people are experiencing sexual intercourse is reported from numerous countries, including Austria, Belgium, the U.S., Nigeria, and the Philippines.[21] Aside from the biological factor, the overwhelming cause identified by most analysts can be described as "modernization" with all of its implications. And all of these developments have led to, and occur within, the "bio-social gap," that lengthening period between puberty and marriage, which formerly occurred simultaneously, when young people are not yet adults, are not yet prepared to be self-sufficient, and are not yet expected to be sexually active.

Changing societal values

In Africa, for example, traditional systems of preparation for adult life are being threatened, resulting in the loss of parental and community guidance in the area of sexuality. At the same time, aspects of urbanization, such as housing shortages and increased education for females, create an environment for increased interaction between adolescent males and females and allow for peer pressure to exert its powerful force. These influences of permissiveness and increased opportunity for sexual expression, however, must be viewed in the light of traditional values which are still strong and operating in the same direction. Most African societies place high value on large families, with expectations of early marriage and prompt childbearing within those marriages.

Other societies where marriage traditionally comes early have been influenced by modern needs and realities to raise the legal age of marriage. In India the legal age of marriage is now 18 for women, but many women continue to be married earlier, reflecting the strong pull of traditional values. Religious norms significantly influence adolescent sexual behavior, so that sexual intercourse outside of marriage is generally prohibited by law and condemned by the public, as in Indonesia. However, even in Indonesia shifts are now observable in the big cities.

Many countries are experiencing a real flux in values. Sociologist Mounir Khoury describes Lebanese society as close to "normlessness," with little support for often contradictory norms and values and consequently less direction for adolescents in their sexual behavior.[22] Cuba is an example of a country which underwent significant changes in social mores following its 1959 revolution. Emphasis is placed on involvement of the young, men and women, away from traditional parental control and sexual expectations. No longer does the taboo against premarital sex prevent out-of-wedlock pregnancies.[23] The same diminution of parental and social control is evident in many other societies of Latin America, North America and Europe. These societies have witnessed a long-term evolution of freer sexual expression in general and, in particular, greater independence of young people to participate in these changes.

A major purveyor of the altered values and mores is mass media which increasingly reaches most areas of most countries. Adolescents are avid consumers of the media and are heavily influenced by it. Teenagers in the U.S., for example, watch or listen to major forms of media (television, radio, motion pictures) 45 hours per week, on average. TV in particular seems to communicate a fantasy view of the world in which sex occurs without responsibility and various events (divorces, out-of-wedlock births, abortions) are out of proportion to reality. A dramatic example of changing attitudes is TV reference to sexual intercourse: extramarital sex occurs six times more than sex between spouses and 94 percent of sexual encounters on "soap operas" are between unmarried people.[24]

Attitudinal changes

Many attitudes which are conducive to adolescent sexual activity are becoming more common. These frequently stem from certain characteristics of adolescence, which is a period of great physical and emotional changes—a time of searching for one's identity and passage into the world of adulthood. Consequently, sexual activity is frequently precipitated by nonsexual causes, such as the need for acceptance by peers and for a sense of belonging and a desire for love. Initiating sex can be perceived by the young as a proper rite of passage—a specific event that helps adolescents define themselves and understand who they are. It can further serve as a way to help separate them from their childhood by punishing their parents or getting away from home, particularly if pregnancy results. In many cases, early sexual activity is a diversion from reality—a reality which involves social or academic failures and often results in poor self concept.

Social and economic factors

Many social and economic factors are significant predictors of early sexual activity. In general, the lower the income and education of the parents and the adolescent, the earlier sexual activity begins and the greater the likelihood of an early pregnancy. Family size and structure are also related. The larger the adolescent female's immediate family, the more likely she is to begin sexual activity and childbearing at an early age. In U.S. and Costa Rican studies, a single-parent home increases the chances of sexual activity; where the father is present, his educational level has a negative effect on the probability of intercourse.[25]

There are other less quantifiable social characteristics that have a strong bearing on adolescent sexual behavior. Adolescents who consider religion of importance in their lives are less likely to be sexually experienced. Those with low educational expectations are more likely to engage in sexual intercourse.[26]

Unintended pregnancy

A young woman's view of her future and her understanding of how pregnancy and its consequences might affect that future are highly determinative of her ability to prevent early childbearing. Young people tend to have difficulty making realistic plans for the future and seeing the longer-term effects of current actions. Typically, adolescent females underestimate the obligations of raising a child and are unrealistic about relative costs and benefits. A young woman may perceive that becoming a mother will give her adult status and someone to love her but fail to anticipate what motherhood will cost her in lost membership in her peer group, participation in age-appropriate activities, and abruptly curtailed educational and vocational possibilities. As researcher and social analyst Joy Dryfoos puts it:

> "Unless a young woman believes that childbearing during adolescence will limit her opportunities in life and that foregoing maternity will result in enhanced life options, she is not likely to protect herself sufficiently against pregnancy even though she does not particularly want to become a parent."[27]

In some countries, the majority of adolescents who become pregnant do so unintentionally. As of 1978 in the U.S., for example, unintended pregnancies accounted for 86 percent of all those that occurred to unmarried adolescents and 51 percent of all pregnancies among married teenagers.[28] There are numerous reasons for these failures, including ignorance of the reproductive process and of birth control methods and availability, and not believing that intercourse—or a subsequent pregnancy—would take place. Many studies, in the U.S., Hong Kong, Singapore, Kenya, Nigeria, Seychelles, the Caribbean, Turkey, Switzerland, France, and England, report massive ignorance among adolescents about basic reproductive function and contraception.[29]

Two teenage mothers in the U.S. where 86 percent of pregnancies to unmarried adolescents are unintended.

Part of this ignorance and misinformation stems from the sources of information available to adolescents. In many countries in Europe and in Kenya, the Philippines, and the U.S., the media is a major source, and in others, such as Grenada, Nigeria, Turkey, and Canada, peers predominate.[30] Both sources are frequently ranked in one-two order and both are noted for their lack of accurate, unbiased presentation of sexuality issues. Family and school are sometimes more important for females, but there is a reluctance to confide in family members for fear of disapproval. Communication between parents and adolescents, often generally poor, is worse on sexual subjects, especially on the sensitive issue of birth control. However, it is generally true that lack of information tends to be a more important factor in unintended pregnancy—frequently the major cause—in developing countries, whereas emotional and developmental factors seem to be more important in developed countries, at least as reported in the literature. In fact, knowledge about contraception is relatively high in many developed countries, but the motivation or access to use it are lacking.

Teenagers frequently do not expect to engage in sexual intercourse, in part because they believe it to be morally wrong. At the same time, they place a great emphasis on spontaneity and romance and feel that planning for sex would compromise those ideals. For either the moral or romantic reasons, teenagers often prefer to be "swept away," thereby relieving themselves of contraceptive responsibility. Added to this is risk-taking, which is a typical adolescent behavior and is particularly true of adolescent sexual activity. Sociologist Kristin Luker suggests that teenagers casually "weigh" the costs and benefits of using contraception or becoming pregnant, and many risk pregnancy.[31] Misconceptions about the risk abound: the belief that the timing of intercourse will not lead to pregnancy, that the girl is too young, and that intercourse has not occurred frequently enough.

Use of contraception and family planning services

The difficulty of adolescent contraceptive use is exacerbated by the fact that responsibility and initiative typically fall on the female, often the less powerful decision-maker. Frequently the young woman, whether married or not, is swayed by her partner's negative attitudes toward birth control, which prevent her from using it. Or a partner could be apathetic even when the female is depending on him, as were 40 percent of male partners of women seeking abortion surveyed in India.[32] Females, too, have negative attitudes toward contraception. In many countries this reflects a fear of side effects and health hazards, which was the primary reason for nonuse of birth control given by young women surveyed in Nigeria and Brazil.[33] Media reports sensationalizing side effects of certain methods, particularly the pill, further intensify health fears and contribute to significant method-switching by teenagers.

It is not surprising that adolescents are poor users of contraceptives, given their information about them, their developmental characteristics, and their attitudes as influenced by a variety of factors. A most difficult and counterproductive situation occurs in many countries: peer and media pressures strongly encourage sexual activity, while the society's moral influences—parents, the church, and government policy—disapprove or prohibit access to birth control services. This is true in both developed and developing countries. In Canada, for example, adolescents' lack of motivation to seek contraceptive information and services is reinforced by adults and the school system who regard the issue as inappropriate for them. In the Caribbean, nonpregnant adolescents are "protected from access to contraception by a whole variety of norms and informal social pressures," but after a pregnancy, family planning is commonly encouraged. Arnoldo Gomensoro has made a strong case that adolescents, especially young women, will never use contraception until we resolve our mixed message. They cannot be expected to use a service, in many ways difficult and uncomfortable to them, when society is also saying that it is not morally acceptable to be sexually active while still unmarried. In an eloquent plea to accept adolescent sexuality as fact and help young people to take responsibility, he writes: "As long as the ideology of those who retain the power of prohibiting or permitting is opposed to contraceptive information, programs that seek to provide these things are necessarily condemned to failure."[34]

Adolescents delay or avoid using contraceptive services for many reasons. A most significant factor is their perception of being unwelcome in family planning facilities. The result is pregnancy. Teenagers in the U.S. delay an average of nine months to a year following initial intercourse before seeking clinical services. Canadian studies report that a typical adolescent delays six months to two years and that 85 percent of adolescents are unprotected at first intercourse. When one realizes that half of all premarital teenage pregnancies occur within six months of sexual debut, according to a major U.S. study, the dangers of this delay become obvious. The high risk of pregnancy during the first six months has been confirmed by studies in Grenada and Nigeria as well.[35]

In many developing countries access to any health care can be rare, particularly in rural areas. Where health services do exist and where they include family planning, the family planning services are not typically available to unmarried adolescents in countries like Lebanon, India, and Indonesia. In other situations, including various African countries and in Italy, for example, the services are geared to adults and adolescents are not attracted to them.[36] Adolescents can be frightened by the world of medical services and personnel in general and particularly when they feel that they are questionable clients. A Canadian study of physician attitudes and practices reported that significant numbers of these personnel were reluctant to provide services to young single women without parental consent.[37]

The question of confidentiality has emerged as a major concern for adolescents in the U.S. with controversy over the "squeal rule." This was prevented by the courts from going into effect, but would have required parental notification if federally funded clinics provided prescription contraceptives to young people under 18. England too has faced controversy over doctors prescribing birth control for those under 16. There it has been decided that parental consent is required. These public battles have an aftermath of confusion and misunderstanding for the adolescents most directly involved.

Other access issues involve teenagers' lack of planning for a clinic visit (typically required before receiving contraceptives), difficulties in keeping appointments, embarrassment, and cost of the services.

Finally, the lack of contraceptive methods suitable for adolescent use is both a deterrent and a reason for inconsistent use and method-switching. A method for adolescents must be effective and well tolerated, with perfect and quick reversibility and no effects on maturation.[38] Medical and clinical literature seems to agree that the pill is probably the best since it is highly effective and noncoitally related. But it does take diligence and, given sporadic adolescent sexuality, it is constant medication for infrequent need. Spermicides and condoms are theoretically more appropriate for occasional use but their failure rates can be high and adolescents are reluctant to use a method which must be applied at the time of intercourse. The IUD must be used with caution as infection rates can be unacceptably high with young women. Withdrawal and rhythm are difficult to use effectively; this is even truer for adolescents who lack control and patience.

In sum, the causes of early sexual activity and pregnancy are diverse and vary societally, but the elements of earlier maturation, changing sexual values, lack of information, risk-taking behavior, inaccessibility of services, and insufficiently appropriate contraceptive methods seem to be common to adolescents in most parts of the world.

Consequences of Adolescent Fertility

The consequences of adolescent pregnancy and childbearing are dramatic. They relate to a wide range of health, psychological, social, economic, and demographic outcomes and the effects go beyond the young mother to affect the father, other members of the adolescent's family, her offspring, and society itself.

Health-related consequences

The most obvious set of consequences are health-related. Mothers under age 20, as a group, suffer more pregnancy and delivery complications than women who bear children at 20 or later. Problems reported from diverse parts of the world include higher than average levels of toxemia, anemia, bleeding, disproportion between the size of the infant's head and the mother's pelvis, cervical trauma, prolonged and difficult labor, premature delivery, and death. The chances that a teenage woman will have such problems are higher in developing than in developed countries, and higher among poorer compared to better-off adolescents within countries.

Worldwide, pregnancy-related deaths are the main cause of death among 15-19 year-old females. In Sierra Leone, the 15-24 age group accounts for 38 percent of pregnancy-related complications, most of which occur to 15-19 year-old women. Poor living conditions in that country, as well as inadequate nutrition, prenatal care, and health education, aggravate the risks compared to developed countries. In most Latin American and Caribbean countries, childbearing and abortion are ranked in the top five causes of death for 15-19 year-old women, with the phenomenon most common in Jamaica. In Bangladesh, birth-related complications, including those arising from abortion, are the leading cause of death among teenage women.[39]

Pregnancy-related mortality rates are higher for teens than for older women in developed countries as well. In Canada, for example, they are twice as high. On other outcomes, U.S. figures suggest likely increases of 15 percent for toxemia, 92 percent for anemia, and 23 percent for complications resulting from a premature birth compared to mothers aged 20-24. These conditions are worse for the younger teenager. For example, the maternal mortality rate for girls under 16 in England is four times the overall rate for women. Problems like preeclampsia and premature birth also seem to intensify for adolescents under 17, as reported in a Danish study and confirmed elsewhere.[40]

At the same time, it is important to note that recent studies suggest that some complications are not related directly with age but with inadequate prenatal care and nutrition. One study noted that European adolescents having first births who participated in a special program had no greater obstetrical and neonatal risks than adult women. Another, looking at Swedish teenagers, found that complications are no more frequent than with older mothers if they experience good social standards and prenatal care.[41] Research in Kenya confirms these findings; obstetrical risks are no greater for teenagers if proper prenatal care is provided.[42]

It is likely that this amelioration is truer for older than for younger adolescents, but it also raises the question of adolescent behavior in obtaining needed medical services, assuming they are accessible. (In the developing world, about three-quarters of births occur without prenatal care.) Adolescents tend to seek prenatal care much later than older women and they tend to be poor clinic attendees. Their lateness in seeking care is related to initial denial of pregnancy, uncertainty about the signs of pregnancy, irregular menstrual periods that can mask pregnancy, guilt, and other problems of inadequate knowledge, embarrassment, and motivation which are also true of adolescents seeking contraceptive services to prevent pregnancy.

Abortion is tolerated medically very well by this age group. In the U.S., for example, teenagers are five times more likely to die from childbirth than as a result of legal abortion.[43] However, in many countries, adolescents rely heavily on clandestine illegal abortion because they lack information about and access to legal procedures and because they do not want to risk being discovered. These abortions tend to have much higher complication rates generally, and even more so for teens because of surgical difficulties related to adolescents' emotional and physical immaturity. These include hemorrhage, perforation, and visceral and cervical injury.[44] Another factor in-

A young mother and child in Mali. Worldwide, pregnancy-related complications are the main cause of death among 15-19 year-old women.

creasing the risk of adolescent abortions is that young people tend to delay obtaining the procedure until after the first 12 weeks of pregnancy when abortion is safest. This is attributable to ignorance about the signs of pregnancy and availability of the service, irregular menstrual cycles, denial, ambivalence, embarrassment, fear, and concern over confidentiality and cost. There are undoubtedly short-term psychological consequences as well for the adolescent, whose emotional world is normally intense. But long-term problems are probably relatively mild, particularly compared to the alternative of childbearing. As reported by an English group which focuses on adolescent reproductive health concerns, guilt and other aftereffects of induced abortion are negligible compared to problems arising from breakdown of teenage marriages, surrendering the baby for adoption, stress of keeping the baby, and feelings of inadequacy at mothering.[45]

Health risks are also associated with the babies of adolescent mothers. Such complications include higher incidence of low birth weight (which in itself can lead to neurological problems, retardation, and other health problems, including death), prematurity, stillbirth, and perinatal mortality. In the U.S., for example, the risk of death during the first year of life for babies of mothers under 20 is twice that for babies of older mothers.[46] Also, the younger the mother, the more serious the consequences appear to be. Mothers aged 15 and younger are twice as likely to have low-birth-weight babies as mothers aged 20-24.

Psychological and social consequences

In many societies, the young mother, particularly if she is single, faces psychological and emotional problems in adjusting to parenthood. These intensify if she is trying to raise the child alone. If she is fortunate enough to have the support of her family, she is still likely to experience increased tensions and confusion over roles and responsibilities. Even within marriage, a very young mother frequently lacks the emotional stability, maturity, and experience to carry out her new role confidently. Although young mothers' reactions are probably different in societies that encourage early childbearing, it is interesting that almost half of young mothers queried soon after their child's birth in one U.S. study said they wished the baby had been born later or not at all. Three years later, over three-quarters of these mothers said they wished the child's birth had been delayed.[47]

Some children born to adolescent mothers also suffer reduced mental capability and psychological consequences. In U.S. studies, they tend to have slightly lower I.Q.s compared to children born to older mothers and their social and emotional development is affected. According to British studies, they also suffer increased risk of abuse and health hazards.[48]

Where early or out-of-wedlock parenthood is frowned upon by social mores, the young mother faces censure or rejection by her community. She might be forced into an inappropriate marriage to help counteract her social isolation, and these marriages are considerably more likely than others to dissolve. Children too, in many cultures, face social and legal discrimination if they are born out of wedlock. This in turn can lead to greater chances of neglect and even abandonment, or what is called "baby dumping" in Sierra Leone and Zimbabwe.[49]

Educational and occupational consequences

One of the most dramatic and long-term results of early parenthood, with or without marriage, is the curtailment of a young woman's education. In some societies, pregnancy itself is a reason to expel a girl from school, as happens with 2 percent of all school girls in Zambia. In a survey in Dar es Salaam, Tanzania, 92 percent of young women dropouts (adding up to 10 percent of total female enrollment in the city's schools) gave pregnancy as the reason; countrywide in Tanzania, 18,700 young women abandoned their education in 1982 due to pregnancy. Many young women seek to avoid this result by terminating the pregnancy; the threat of expulsion is the main reason for illegal abortions among schoolgirls in Nigeria. The Caribbean, where one-third of all pregnancies are to women under 19, witnesses a substantial number of school girls dropping out as they are required to leave school if pregnant, and with no chance of readmission. In a Costa Rican survey, 51 percent of the pregnant girls studied who were attending school dropped out because of the pregnancy and 61 percent who were employed stopped working.[50]

In the U.S., only 50 percent of teenage women who give birth before 18 ever complete high school, compared to 96 percent who do not have children before age 20. Teenage fathers are affected too, as only 70 percent complete high school, compared to 95 percent of non-parenting teen men.[51]

The literature from diverse developing and developed countries reports lowered occupational status and reduced income as a direct result of curtailed education. In the U.S., women who were teenage mothers earn about 50 percent of the income of those who first gave birth in the their twenties. And the cycle of poverty is influenced by this fertility pattern; the children of teenage parents are more likely to become teenage parents themselves than those born when their parents were older.[52]

Economic and demographic consequences

There are public sector costs as well in those societies which provide support services for those unable to pay for basic living expenses. In the U.S., for example, 64 percent of mothers under 30 receiving assistance from Aid to Families with Dependent Children (AFDC) in 1975 had given birth to a child in their teens, compared to only 24 percent of all American women who were 20-30 in 1975. Twenty-five percent of teenage mothers in the U.S. depend on this government assistance. It is estimated that in the U.S. in 1975, state and federal governments spent $8.6 billion on AFDC cash benefits, food stamps, and Medicaid services for mothers and children in AFDC families established by teen mothers.[53]

In Africa, there is a strong relationship between early marriage and adolescent fertility but the overall fertility rate seems not to be affected.[54] However, in many other societies early childbearing translates into a faster pace of subsequent childbearing and higher completed family size. Thus, there are significant demographic effects as a result of both shortened time spans between generations and larger average family sizes. In turn, the cyclical nature of adolescent fertility increases the risk that the next generation will also begin childbearing early and experience greater fertility.

In sum, the consequences of early childbearing include health risks to the mother and her offspring (potentially offset by good prenatal care, especially for older adolescents), psychological strain and dislocations for the mother, her family, and the offspring, possible social censure, curtailment of education and economic opportunities, possible higher costs to the society, and increased demographic impacts.

Laws and Policies Affecting Access to Information and Services

Laws and policies related to adolescent reproductive health information and care, if effectively implemented, can specifically support or inhibit programs in these areas. In the past, laws have restricted activity in such controversial matters as sexuality education in schools and family planning services for teenagers. But as practice has changed, laws and policies are changing also to more adequately meet adolescents' needs. In some cases, the law is providing very detailed solutions to the issues involved.

Law and sexuality education

Worldwide, there are several legal patterns related to sexuality education. These range from mandatory provision to legal restrictions which effectively, if sometimes indirectly, prohibit such instruction in schools.

A few but growing number of countries have made sex education mandatory in the school curriculum. These are predominantly European and most have comprehensive legislation dealing with the subject, which suggests how important they regard such education. Sweden, in 1956, was the first country to introduce mandatory sexuality education into its school system. The curriculum was revised in 1977 (for details, see Table 9, page 28). The Czechoslovakian experience, which began in the early 1960s, is similar. Mandatory sex education programs have existed for more than a decade in Hungary and Yugoslavia as well. More recently, France, Iceland, and Luxembourg have begun to implement comprehensive laws and policies on reproductive health that make provision for sex education. The Luxembourg law states that the school-based program is intended to be "complementary to the sex education given in the family." Other developed countries which mandate sex education include Denmark, Norway, East Germany, West Germany, and the Soviet Union. In the U.S., only three jurisdictions mandate sex education in school: Maryland, New Jersey, and the District of Columbia.

Government efforts to implement mandatory programs have not gone unchallenged. In the *Kjeldsen, Busk, Madsen and Pedersen* case (1976), the European Court of Human Rights held that the policies in Denmark, dating from 1970, did not violate human rights of the parents who objected to the program; the instruction, the Court ruled, supplemented knowledge gained elsewhere to ensure that students received correct objective and scientific information. It also could warn students about the disturbing "phenomena" of "excessive frequency of births out of wedlock, induced abortions, and venereal diseases."[55]

The Philippines and Costa Rica are among the few developing countries that have adopted the mandatory approach.

Many countries have no specific legislation on sex education and whether or not it exists depends more on other policies as well as the political or religious climate of the country. In some countries, the official policy is to encourage introduction of a sex education curriculum but the final decision typically rests with local school authorities. This optional pattern is a well-accepted approach that makes it possible to avoid the contentious question of compulsion. Frequently, parents are given a say about their children's participation in these programs. Examples of countries offering sex education without national legislation are Austria, Belgium, Great Britain, the Netherlands, and the U.S. One type represented in this pattern is the de-

Table 9. Laws and Policies on Reproductive Health Education and Information for Adolescents: Selected Countries

Country	In school (education)	Out of school (information)	Comments
Argentina	Permitted, except for information on contraception	Permitted, except for information on contraception	1974 decree severely limited information and programs because of pronatalist policy
Chad	Prohibited (1965) Information on contraception prohibited	Prohibited (1965) Information on contraception prohibited	Law modeled on France's anticontraception law of 1920.
Czechoslovakia	Mandatory (1960s) Information on contraception at age 15	Permitted and actively promoted	"Family life education" from first year of school. From age 12, separate classes by sex. Institute of Health Education develops materials. Material linked to family planning program.
France	Mandatory (1981), including information on contraception	Permitted (1967)	Information legally available to public since 1967. Until 1981, contraception and ethical issues discussed outside school time with parental permission. Now natural science curricula for adolescents include reproductive biology plus contraception and its uses.
Indonesia	Permitted Information on contraception prohibited for those under 17	Permitted Information on contraception prohibited for those under 17	Reproductive biology part of school curriculum. Law makes it illegal to give information on contraceptives to those under 17. Counseling or programs specifically for adolescents would be forbidden.
Italy	Neither encouraged nor discouraged	Permitted (1971)	Old law declared unconstitutional in 1971. "Official" confusion whether to have family life and sex education in curriculum. Private organizations active.
Mexico	Encouraged (1974)	Permitted (1974)	Grades 4-6 (primary school) touch on sex education as part of natural science. No compulsory course in secondary school.
Pakistan	Restricted	Restricted	Restricted by statutory laws plus religious principles.
Philippines	Mandatory (1972), including information on contraception	Permitted (1972) and actively promoted	Family planning counseling prerequisite for marriage license (1976). National Population Commission has explicit policy to disseminate contraceptive information.
Sweden	Mandatory (1956), including information on contraception for ages 14-16, plus information and decision-making on abortion for ages 17-19	Permitted and actively promoted	Sex education begins when school starts. Parents consulted on syllabus. Under aegis of National Board of Education.
Sierra Leone	Permitted	Permitted	"Sexuality education" takes place in secondary school.

Source: John M. Paxman, "Reproductive Health, Youth, and the Law," *WHO Chronicle*, Vol. 38, No. 5 (1984) Table 1, p. 202.

centralized school system in which educational decisions are made at the local level. In the U.S., for example, 31 states have laws or policies which relate to sex education. In addition to the two, plus the District of Columbia, where it is mandated, it is encouraged in eight states and prohibited in none. In the remaining states, the decision rests with the local school authorities. Most state laws and policies encourage involvement of parents and community members in planning the sex education curriculum, and eight states require it. Most states require or recommend that pupils be excused from this type of instruction if the parents so request.

In many other countries when there is no specific legislation, there is no sex education. This is the case in Bangladesh and much of sub-Saharan Africa and is probably still typical in the developing world where serious consideration of this controversial issue is fairly recent. But in some countries, the lack of legislation has fostered initiatives to offer sex education, at least on an experimental basis. This is true in Brazil, the Dominican Repubic, Nigeria, Sierra Leone, and Tunisia. Kenya has developed an official curriculum for "family life education" after ten years of discussion and experimentation, without involving the legislative process.

Laws in many countries appear to prohibit or limit at least some aspects of sex education. Few of these address the issue directly but they have a "chilling" effect because they restrict the type of information which can be presented in general or set age limits for recipients. In Pakistan, for example, a law forbids distribution to persons under 20 of "obscene objects," which are defined to include anything which "has a tendency to . . . corrupt those whose minds are open to such immoral influence." Sex education is thought to be offensive and has never been offered. In Argentina and Ireland, sex education would be banned if it includes information on contraception; indeed it would be a criminal offense, particularly if it appears to be "propaganda." In Indonesia, sex education is permitted but the law forbids information on contraception for those under 17; thus severe restrictions are placed on the course offerings.

Laws such as these reach beyond formal sex education to restrict communication in other parts of society where young people might also receive needed information on sexuality and family planning.

Restrictions on sexuality information

The flow of information outside the school system is particularly important in developing areas where large numbers of young people have no access to schooling or drop out by the time a sexuality course might be offered. Restrictive laws and policies in such areas are becoming less prevalent, but they still exist. One of the vestiges of the French legal system illustrates this point well. In Chad, a law inspired by the French anticontraception law of 1920 forbids spreading "antinatalist propaganda" through speeches in public places, or by placing books, written material, drawings, pictures, or posters in "public channels." This same situation exists in Benin, Burkina Faso (formerly Upper Volta), the Central African Republic, the Congo, Guinea, Madagascar, Mauritania, Niger, Rwanda, and Togo, though in several of these the laws are ignored or at least have little effect on family planning information.

Consent for family planning services

In most health care systems, consent is the key to access. Until recently, the near-universal rule has been that "minors" in the eyes of the law must have the consent of their parents or another adult before they can get reproductive health care. Experience in many countries has shown that this rule has tended to inhibit youth from seeking health care and, perhaps just as important, made medical and health care personnel overly cautious about providing care to youth.

This has raised the question: At what age or, better, at what stage of individual development should young people be able to take command of their health care decision-making?

During the last decade or so, many countries have altered the parental consent rule in one of two ways. One way is to enact a special law on "health services to minors" that permits the young to seek and consent to medical treatment, including contraception, without parental involvement. Taking the second route, courts in a few countries have fashioned exceptions to the parental consent requirements.[56]

Three patterns are seen in the special legislation. The most common way of empowering youth to consent to their health care is simply to lower the age of consent. Britain, among the first countries to do so, lowered the age of consent for medical treatment from 18 to 16 in 1969. The age is now as low as 14 in the province of Quebec in Canada and the states of Alabama in the U.S. and New South Wales in Australia. Other jurisdictions have adopted in legislation the "mature minor" or "emancipated minor" rules as developed by the courts (see below). Lastly, while some jurisdictions make the ability to consent applicable to all health care, others, particularly in the U.S., apply the new rule only to specific, acute adolescent health problems—drug or alcohol abuse, venereal disease, pregnancy, etc.[57]

Following common law tradition, courts have also developed exceptions to the long-standing parental consent rule. The first of these is the commonsense exception in cases of *emergency* treatment, when there is imminent danger to the life of the young person.

Two other exceptions are important. The *emancipated minor* rule now recognizes that a minor who is emancipated from parental control—married minors or those who live separately from their parents, earn their own living, serve in the armed forces, have children, or make their own decisions on important matters—can consent to their own medical treatment. An alternative *mature minor* rule permits minors with sufficient maturity and knowledge to understand the nature and consequences of the treatment being offered to do the same. Whether a minor is "emancipated" or "mature" is left largely to the doctor to determine, though the courts are sometimes involved.[58]

A third form applies specifically to abortion. Abortion statutes often specify who must consent. Here again the predominant rule has been that a parent, spouse, or guardian must consent if the woman is under age. In India, for example, a pregnancy cannot be terminated "except with the consent in writing of her guardian" if the woman is under 18. In France, only if the minor is unmarried must a parent or guardian consent.

As abortion laws have been changing in the last decade and a half, one of the new features found in the laws has been alternatives to the parental consent requirement. Iceland requires parents to make application for an abortion jointly with the woman if she is under 16, unless "special circumstances render this inadvisable." In Italy, if during the first 90 days of pregnancy it is "impossible or inadvisable" to consult parents, or if they refuse to "consent or express conflicting opinions," the request of a woman under 18 may be submitted to a magistrate who must decide within five days whether to grant approval. Further, where the doctor finds that the pregnancy poses "a serious threat to the health of the young woman" he need not seek the consent of the parents or guardian. At least two countries, Denmark and Hungary, permit parental consent or refusal to be overridden by a committee decision.

In the U.S. the right of some minors—particularly mature or emancipated minors—to consent to abortions has been elevated to constitutional status. This derives from two recent Supreme Court cases: *Planned Parenthood of Central Missouri vs. Danforth* and *Bellotti vs. Baird I and II.* Several states have followed the hints made in the court decisions and enacted statutes that permit a minor who is unwilling to seek parental involvement to apply to a judge who can make a finding as to her maturity, in which case she may consent, or authorize the abortion if the minor can show it to be in her best interests. Now if a state chooses to require parental consent, it must also provide a confidential alternative for those who do not want to involve their parents.

Some countries have eliminated the parental consent requirement for all or some minors. In Czechoslovakia, for example, minors do not need parental consent prior to abortion. When the woman is under 18, the abortion commission may, if necessary, seek parental involvement in the decision, a well as that of the male "who is responsible for her becoming pregnant."

Spousal consent is another aspect of this issue. A high percentage of women between 15 and 19 in developing countries are married, as we have seen, and in many countries, it is common for the husband to control the decision-making process, by law or at least social custom. This means his consent is required before the young wife can receive medical treatment.

Short of consent, the question of whether parents should be "notified" that their child is receiving reproductive health care has been raised in a few countries, creating a new type of conflict between the minor and her parent. In the U.S., what became known as the "squeal rule," requiring federally funded family planning clinics to notify parents of any patient under age 18 within ten days of prescribing contraceptives, was declared unlawful. In the United Kingdom, 1981 guidelines on contraceptive services for minors (under age 16) issued by the Department of Health and Social Security which did not require notification were challenged successfully, so parents must be notified and give their consent. This decision is now on appeal. Sweden has taken a different tack; physicians are actually forbidden to inform parents that a young person (age 15 or over) has approached them for advice on contraception. This guarantee of confidentiality is thought to be a key feature of reproductive health care programs in that country.

Contraception

Contraception is the keystone to any rational approach to reproductive health care for sexually active adolescents, married and unmarried alike. One of the problem areas is that of access. It is here that law and policy are of importance. The law can affect who has access to contraceptive services and under what conditions. Many laws and regulations on contraception affect adults and adolescents alike because they relate generally to the availability of specific methods, but some are aimed specifically at adolescents (see Table 10, page 32).

Contraceptives are still tightly regulated or prohibited in a number of countries, though the number is diminishing. In Gabon, for example, contraceptives may only be prescribed for "therapeutic" purposes, not for family planning, and then only in the case of absolute necessity if the woman is under 25. In Saudi Arabia, contraception as such has been banned altogether.

Many of the inroads into bans on contraception are relatively recent and the same is true for those affecting adolescents. Under the 1969 French regulations, a minor (an unmarried woman under 21) could not get contraceptives without written consent from a parent or legal representative. That requirement was eliminated in 1974, principally as an attempt to remedy the high incidence of pregnancy and illegal abortions among teenagers. At the same time the new law authorized the distribution of contraceptives free of charge at family planning centers. Italy established a network of family and maternity assistance centers in 1975 to provide, among other services, contraceptive advice and methods. The program was based on the recognition that young Italian women required this type of health care. (In that year, 1 percent of births in Italy were to women aged 10-14 and 22 percent to women aged 15-19.)

In some countries where contraception is acceptable for adolescents, it is still not available to the unmarried. One survey on adolescent fertility notes that, as a matter of official policy, family planning programs distribute contraceptives only to married couples in China, Indonesia, Malaysia, the Philippines, and Taiwan.[59] Many sub-Saharan African countries pursue the same policy, including Kenya, Sierra Leone, and Tanzania.[60] This is true also in Mexico, although a World Health Organization review suggests that in this case it is largely a reflection of the negative attitude of medical personnel regarding such services for single adolescents.[61]

Matters are quite different in other countries. In the U.S. and most European countries, most adolescents, married and unmarried alike, have ready access

Table 10. Laws and Policies on Contraceptive-Related Health Care for Adolescents: Selected Countries

	Contraceptive available				
Country	Condom	Pill	IUD	Other	Comments
Brazil	Yes	Prescription only[a]	Copper T only	Yes	Ministry of Health supplies contraceptives to needy adolescents under 20 (high-risk group).
France	Yes	Prescription only	Prescription only	Yes	Unmarried minors may get contraceptives at family planning centers (1974).
Gabon	Prescription only	Prescription only	Prescription only	Prescription only	Contraceptives for therapeutic reasons only, on advice of three doctors. Contraceptives to those under 25 only if "absolutely" necessary (1965).
Hungary	Yes	Prescription only	Prescription only	Yes	16-18 year-olds must be dealt with by specialists in obstetrics and gynecology (1974). Pill only for women 16 and over; IUD for 18 and over or women who have been pregnant.
Indonesia	Yes	Prescription only	Prescription only	Yes	Providing contraceptives to adolescents under 17 technically a crime. Contraceptives to married people[b] only.
Mexico	Yes	Prescription only	Prescription only	Yes	Contraceptives technically unavailable to unmarried minors (1974).
New Zealand	Yes	Prescription only	Prescription only	Prescription only	Consent at age 16. Adolescents under 16 may get contraceptives only from doctors, pharmacies, parents or family planning agencies.
Papua New Guinea	Yes	Yes	Prescription only	Yes	Contraceptives available to minors only if married (1979). Spouse's consent required.
Saudi Arabia	No	No	No	No	Contraception banned (1975).
Sweden	Yes	Prescription only	Prescription only	Yes	Consent at age 15. Doctor forbidden to inform parents.
Thailand	Yes	Prescription only	Prescription only	Yes	Contraceptives available to all adolescents (1970).

Source: Paxman, "Reproductive Health, Youth, and the Law," Table 2, p. 203.

[a] Prescription required from doctor or paramedical worker.

[b] Marriage in this table includes common-law marriage and other kinds of consensual union.

to contraceptives. In Thailand, the policy is to make all forms of contraception available to adolescents of both sexes regardless of marital status. In Hong Kong, where the pill is available without prescription, contraceptive services are extended to all regardless of age, sex, or marital status, even though public opinion seems to disapprove of contraceptive services for unmarried minors.

In Czechoslovakia, doctors appear to be divided, for medical reasons, on whether or not to provide certain contraceptive methods to younger girls, but the decision is essentially left up to the doctor. However, the law does urge that nonhormonal contraceptives only should be issued to never-pregnant minors and that hormonal contraceptives (the pill) be prescribed for minors only in exceptional cases. In Hungary the pill may be prescribed for any woman who is at least 16 years of age, but only obstetricians/gynecologists can do so for women aged 16-18. Another detailed regulation states that the IUD is allowable for any woman who has been pregnant, regardless of age, and otherwise for any woman aged at least 18 for whom pregnancy might involve undesirable health consequences. In New Zealand, the law states that contraceptives can be distributed to adolescents under 16 only by parents, medical practitioners, pharmacists, or family planning agencies.

In the U.S. in 1977, in *Carey vs. Population Services International*, the Supreme Court overturned a statute that prohibited mail-order sales of nonprescription contraceptives (condoms and the like) to minors in the state of New York. A key argument used by the state to justify the statute was its interest—certainly laudable if unrealistic—in deterring premarital sexual activity among adolescents. It was argued that making contraceptives widely available acted as an inducement to illicit sexual conduct. The Court challenged the accuracy of that position by observing that "there is no evidence that teenage extramarital activity increases in proportion to the availability of contraception." The Court went on to say: "It would be plainly unreasonable to assume that [New York] has prescribed pregnancy and birth of an unwanted child (or the physical and psychological dangers of abortion) as punishment for fornication." Supreme Court Justice John Paul Stevens wryly observed: "It is as though the state decided to dramatize its disapproval of motorcycles by forbidding the use of safety helmets."

Abortion

Adolescents seeking abortion face legal obstacles nearly everywhere. In the first place, abortion is typically limited—for all women—according to the stage of pregnancy or reason for seeking abortion. Further limitations are procedural regulations on who can perform abortions, where they can take place, etc. In some countries, abortions for adolescents are subject to special rules or require the additional consent of a parent, spouse, or guardian, though, more often than not, the final decision is given to doctors for a medical determination.

Some legislation permits persons deciding whether to allow an abortion to take into account a woman's social environment, economic circumstances, age, and marital status—factors that are often especially important for adolescents. An increasing number of countries have enacted laws of this type. Some require a complicated calculus to be used; others are more individualized.

Eastern European countries have been leaders in addressing reproductive health needs of young women. Hungary permits abortion for a wide variety of social reasons and unmarried minors have the *right* to abortions (see Table 11). In Finland after the first 12 weeks of pregnancy when abortion is available on request, a committee considering individual cases may take a woman's socioeconomic situation into account. In New Zealand, the fact that a woman is near the beginning of the childbearing years is not a rationale "in itself" for abortion but may be a factor in determining the medical necessity for the procedure.

Though many steps have been taken in the past decade to provide a legal basis for the interruption of pregnancy among adolescents, some areas are still unsettled so far as the law is concerned. Also, the fact that the law has been liberalized in many countries does not necessarily mean that the services are in fact more widely available for adolescents.

In many respects, the present legal status of adolescent abortion is much less consequential than the practice of illegal abortion. Experience clearly has shown that women will turn to abortion as a method of coping with unwanted pregnancies whether or not it is legally available. For various reasons, adolescents are more likely than older women to seek illegal abortions, which can pose immense health risks. As one would expect, many illegal abortions are performed among adolescents in countries where laws on abortion are restrictive. But the practice also occurs in countries with relatively liberal laws because of impediments created by the law, such as screening procedures and parental consent requirements.

Programs Addressing Adolescent Sexuality and Fertility Regulation

The provision of fertility regulation information and services to the public is a relatively recent phenomenon. Country

Table 11. Laws and Policies on Abortion-Related Health Care for Adolescents: Selected Countries

	Abortion available if:							
Country	Risk to life of woman	Risk to physical health of woman	Risk to mental health of woman	Risk to health of fetus	Unwanted pregnancy by rape, incest or other criminal act	Social, sociomedical, or socioeconomic grounds	On request (usually first trimester)	Comments
Argentina (1967)	Yes	Yes	No	No	Yes	No	No	Criminal proceedings for rape must be initiated.
Colombia (1936)	No	No	No	No	No	No	No	Pardon or sentence reduction for abortion if done to protect adolescent's "honor."
France (1975, 1979)	Yes	Yes	Yes	Yes	No	No	Yes	If unmarried, under age 18, parental/guardian consent required, as well as consent of minor. If married, spouse's consent not required. On request up to 10 weeks.
Hungary (1975)	Yes	Yes	Yes	Yes	Yes	[a]	[a]	Unmarried minors have *right* to abortion. Except for "medical grounds," pregnancy must be less than 8 weeks unless delay not woman's fault. Socioeconomic grounds narrow and specific. Parental consent is rule.
India (1971)	Yes	Yes	Yes	Yes	Yes	Yes	No	For first 90 days parental consent required for women under 18. If conflicts exist or abortion is "impossible or inadvisable," magistrate can decide. Doctor may do so without parental notice if "serious threat." After 90 days no parental/guardian consent required.
Indonesia (1915)	No	No	No	No	No	No	No	
New Zealand (1977, 1978)	Yes	Yes	Yes	Yes	Yes	No	No	Pregnancy at beginning of childbearing years "may be considered." Rape itself not a ground. Pregnancy resulting from incest with "closest relative" a ground.
Norway (1975, 1978)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	On request up to 12 weeks. After that, woman's overall situation assessed. If under 16, parents/guardian given "opportunity to express opinion."
Singapore (1974)	Yes	Yes	Yes	No	No	No	Yes	Consent of "woman" only, irrespective of age.
Zambia (1972)	Yes	Yes	Yes	Yes	No	Yes	No	Age may be taken into account by three medical opinions.

Source: Paxman, "Reproductive Health, Youth, and the Law," Table 3, p. 205.

[a] Available in selected circumstances to certain groups of women.

by country when such services are first offered, the target population is nearly always married women with children. Only later—and in recent years—are programs extended to unmarried persons, including adolescent women. In no country, developed or developing, are these programs fully adequate to the existing need and in no country are they viewed without some conflict or concern.

Yet the world community is on record in support of the human "right" to adequate education, information, and services for all individuals and couples so they can determine "freely and responsibly the number and spacing" of their children. A resolution to this effect was approved in 1968 at the United Nations

Conference on Human Rights in Teheran and was reaffirmed by the 1974 U.N. World Population Conference in Bucharest and again in 1984 at the International Population Conference in Mexico City, which specifically strengthened the intent to meet adolescents' needs. Responsibility to carry out this agreement rests with individual countries and their educational and health institutions.

Programmatic needs

The need to be adequately informed about fertility-related matters has always existed for young people as well as adults. Yet their access to such information has been slow to materialize. And, although there are numerous channels for reaching young people, because they have age-specific educational, recreational, and social activities, there is also greater controversy surrounding the appropriateness of supplying such information to this age group and, even more so, the necessary services.

In developing countries, the need for such services far exceeds the supply. Married women who already have the number of children they want are considered higher priority than young women who, depending on the cultural viewpoint, either should be abstaining from sexual activity until marriage or having children immediately following marriage. In many countries, developing and developed, a strong argument for withholding information and services from unmarried young people is the fear that such access will encourage or condone sexual activity.

There has always been some motivation to provide information and guidance to young people about sexual matters. In many countries this occurs at puberty, often as part of a rite of passage to invest the child who is becoming an adult with the society's values. In the past, marriage and childbearing typically coincided with this maturational stage. More recently and in developed countries, given the increased gap between menarche and marriage, the motivation to provide information about sex and fertility matters has been primarily to avoid various negative outcomes, such as venereal disease, out-of-wedlock births, and abortions. In some cultures, the objective is broader: to imbue young people with a sense of responsibility to society, to protect the family, and—in some rare situations—to assist the young with their sexual development.

While parents generally want to be the major providers of sexual information for their children, they rarely carry out this role effectively or to their own satisfaction. In diverse societies, they have clearly articulated their need for others to help with this task. In the U.S., for example, 98 percent of parents have reported needing help in providing sex education and three in ten have indicated that they want structured programs to learn how to teach their children about sexuality.[62]

Programs to educate and serve adolescents have been slow to emerge throughout the world. This is particularly true in developing countries. In a 1978 survey of 91 developing countries for the U.S. Agency for International Development, Patricia McGrath found that less than half of these countries had any adolescent-oriented family planning information and education programs and fewer than 10 percent had any contraceptive service programs for this group. None of these countries had a comprehensive national program to reduce adolescent fertility.[63] In another developing country program analysis, updated in 1984, the International Clearinghouse on Adolescent Fertility reported on 105 projects in developing countries.[64] This study found that family life education dominates as an activity type, with contraceptive services the least common. Regionally, Asia has the greatest number of projects and the most involvement by family planning associations and educational institutions. In Africa, uniquely, many projects are sponsored by religious groups. Governments sponsor less than 10 percent of projects throughout all developing regions. However, government views have an important influence on the existence and effectiveness of a country's programs.

Sex education in schools

Foremost among social institutions to assist with the task of educating young people on sexual issues is the school where education on other subjects takes place and which has the potential to reach large numbers of children, at least in their early formative years.

Although prevailing attitudes bar sex education from schools in some countries and significant, vocal opposition groups battle its implementation in others, support is nevertheless widespread and cuts across cultural lines. For example, surveys show over 80 percent of both adults in the U.S. and young people in India favoring such courses. Teachers and parents in India, however, are concerned about what their children will be taught about sexuality and family planning and the same is true in South Korea, Kenya, and the Philippines.[65]

A major trend in sex education has been a broadening of the subject matter from a narrow biological focus to a context of human relationships. Sweden, the acknowledged leader in providing sex education, made the transition from biologically oriented courses in the 1930s to mandatory sex education in 1956 to the present situation of "instruction in sex and personal relationships." Current terminology used throughout the world reflects the broader scope: "sex" education is now "sexuality" education, and—more far-reaching—"education for parenthood" or "family life education."

The trend toward greater availability is dramatically reflected in the decisions of several developed countries and at least two developing countries to make sex education mandatory. It is important to stress, however, that in many instances government encouragement does not necessarily result in widespread adoption or establishment of minimal course content and standards.

The developing world has been more hesitant to institute sex education and, where it exists, it is typically incorporated into other subjects. For example, in Costa Rica, the Philippines, Hong Kong, and Thailand, family life education is part of the science, health, or social studies curriculum. In Japan and China, sex education has just recently been introduced as a pilot project in selected schools.[66]

A key analysis of sex education identified several legal and operational matters that must be faced in the sex education area, in addition to policies regarding availability.[67] These are whether courses should be obligatory or elective, at what age sex education starts, whether to separate or integrate courses, whether to make classes coeducational or separate by sex, whether to include contraception, what role parents should play, what degree of frankness to use, and what qualifications and training teachers should have. These contribute to the quality and quantity of sex education, as well as its effects.

Sex education out of school

Formal, in-school sex education is limited by the need to obtain official approval, often at many levels, given its place in the public system and, perhaps more significantly, by the great numbers of young people who leave school before receiving such instruction. Thus, private and voluntary agencies have developed programs to reach out-of-school youth. These often fall into one of the following categories: educational classes for community or youth groups, outreach activities for youth in a variety of nonschool settings, religious group programs, and specially targeted information campaigns. The provision of sex education in nonschool settings has many advantages. It brings the activities to an existing group site where the setting is less formal. The group and the activities they select are voluntary. Young people can help design and implement the project and parents can be involved. And the projects gain additional acceptance in the community when carried out by traditional and respected groups.

In Hong Kong, an effective partnership has been forged between the family planning association and the Girl Guides. Courses are provided every Saturday in Girl Guide centers to help participants "understand the physical changes during adolescence, personal hygiene, and to establish a correct concept of dating and marriage."[68] In the Philippines, the Ministry of Social Services and Development created "Population Awareness and Sex Education for Out-of-School Youth" which is carried out by a national youth agency. The Supreme Council for Youth and Support in Egypt has conducted a similar program through youth centers. The Grenada family planning association works with youth organizations to reach young people with a program that includes a magazine and contraceptive distribution posts. In the U.S., a private agency, the Center for Population Options, has been carrying out a program with many of the major youth-serving agencies, such as the YWCA, Boys Clubs, and the Salvation Army. The evaluation of this program shows that youth workers, if properly trained, are excellent providers of sexuality education.[69]

Outreach is particularly important if the target population is difficult to attract. In a classic effort, Grapevine, in England, volunteer workers—young people themselves—go out to where their peers congregate (pubs, youth groups, etc.) to encourage them to talk with experienced Grapevine counselors or to visit their local family planning clinics. A similar effort was initiated in West Germany to try to reach youth of low socioeconomic background. Although having some success, this "Grapevine" project experienced some difficulties, especially high mobility in the groups and communication problems between counselors and youth from different backgrounds. The Polish family planning association has also tried to reach youth in specific groups, such as work corps, juvenile offenders, and the military, and has recently begun providing special courses for youth at summer camps.

Bringing educational activities to the workplace has been carried out in several developing countries. Young workers in the Philippines and in Malaysia have received such information and counseling. In India, the family planning association has reached out-of-school women aged 14-25 through a crafts-centered approach.[70]

In Africa the church is the most likely institution to conduct sex education activities for young people in a nonschool setting. The All Africa Conference of Churches held a key ecumenical forum in 1980, with 20 African nations attending, on "Adolescent Fertility Management" to identify the churches' tasks. One of the most highly developed programs represented was that of Ghana's Christian Council, which provides education, counseling, and services, and acts as a catalyst to encourage activities in the formal school sector. Other long-established church programs are in Togo and Uganda, both dating back to the 1960s. These emphasize preparation for marriage and religious values relating to sex, love, and family life.[71]

Relating sexual education to marriage is also stressed in various Asian outreach programs, such as the "Late Marriage Movement" in Bangladesh and the "Marriage Law Education and Training Projects" in Indonesia. While these typically target young women, some special projects have been developed to reach young men. The Hong Kong family planning association has a "Male Responsibility Campaign" which is promoted through various media and other appropriate means such as a soccer team, and England's family planning association has recently begun "Men Too" to increase male responsibility in personal and sexual relationships.

Information on sexuality and family planning

There is a great need to communicate information about sexuality, family plan-

8449
Plan now,
to have a baby later.

A bus carries this family planning message for teenagers in Washington, D.C.

ning, and the availability of birth control methods and services. Many countries have had laws preventing or restricting the flow of such information which are generally becoming more liberalized. Most developed countries no longer have legal barriers but many developing countries do. In both situations it is still difficult to get birth control information in print and on the air. This seriously affects young people as they rely on media as a primary source of information on sexuality and family planning. Where it does appear, information in the mass media usually consists of facts and advice, motivation, referral to services, and special multi-media campaigns, and appears in such vehicles as newspapers, magazines, billboards, radio, and television.

Facts and advice appear in such forms as reader inquiry columns in women's and youth magazines, call-in radio shows, and sex education programs on TV. In the Soviet Union, the magazine *Health*, with a monthly circulation of 11.6 million, began regular columns on sexuality when sex education was just starting on an experimental basis in schools.[72] U.S. magazines and newspapers frequently provide information on sexual matters, while radio and TV more commonly present sexual content as song lyrics and dramatic themes with little educational value. By contrast, England's BBC recently began a radio series on sex education for young people with significant youth involvement. Other radio shows air in Indonesia and Costa Rica. Popular print media, such as comics and photo-novelas, are used to communicate sexual information in Mexico and the Philippines.

Motivational activities are similar to educational ones, with an added emphasis on promoting certain behavior, usually responsible sexuality and use of contraception. The French government, in November 1981, sponsored a TV advertising campaign featuring family planning messages by a famous actress. The ads contributed to a threefold increase in calls to clinics requesting information and a 20 percent increase in clinic attendance.[73] In a similar effort in the U.S., using music and sports heroes (such as Linda Ronstadt and Muhammed Ali), a project now with the Center for Population Options produces information spots for distribution to teen-oriented radio stations. Limited evidence suggests that these media spots can be effective as referral devices when they provide a clinic's phone number or address as a "tag line." Sri Lanka has also used radio spots featuring pop stars to encourage sexual responsibility.

Many family planning agencies have employed all these approaches and more in major campaigns to promote services. These are usually big media splashes done for a limited time, linked by a theme, such as "Love carefully." The Netherlands family planning association carried out such a campaign for a month in 1976 to attract more young people to its clinics and reach people close to youth. Their slogan, "How do little hedgehogs do it? Veeery carefully . . . ," was known to the public and used in the promotional materials: posters, stickers, comic strip leaflets, newspaper and magazine articles, radio and TV programs, and at cinemas.[74]

Counseling young people

Using young people to reach young people is based on peers' high rating as providers of sexuality information, whether accurate or not. Many family planning associations use this strategy in their education and counseling sessions. A U.S. project, Teenage Health Consultants, also used this approach in training teenagers to deliver health care information to their peers in schools and other settings. A Thai program engages young volunteers to provide counseling and contraceptive services through youth centers and mobile teams. In Guatemala, young people serve as peer family life educators and health promoters in the El Camino multi-service program for teenagers.

Telephone counseling—by peers and others—frequently attracts teens, as it provides personal, yet anonymous contact. It is a feature of some programs like New Grapevine (Grapevine's successor, established in 1981) or stands primarily by itself, as in "Community Sex Information" and "Choice"—"hotlines" in New York City and Philadelphia.

Reproductive health services

Family planning services geared to adolescents, provided either through countries' public health services or by family planning associations, are increasing in developed countries. In developing countries such services are generally still in the planning and negotiation stage. In most—but not all—countries, adolescents can use available family planning services typically set up for adult women, but in fact, unmarried teenagers tend not to in great numbers. By and large, program planners recognize that they need to tailor their approach for teenagers specifically but this makes the service, which is controversial nearly everywhere, all the more visible and open to attack. Nevertheless, some excellent programs have been developed to meet teenagers' clinical needs. More often than not, these combine many kinds of psychological and medical services related to reproductive health.

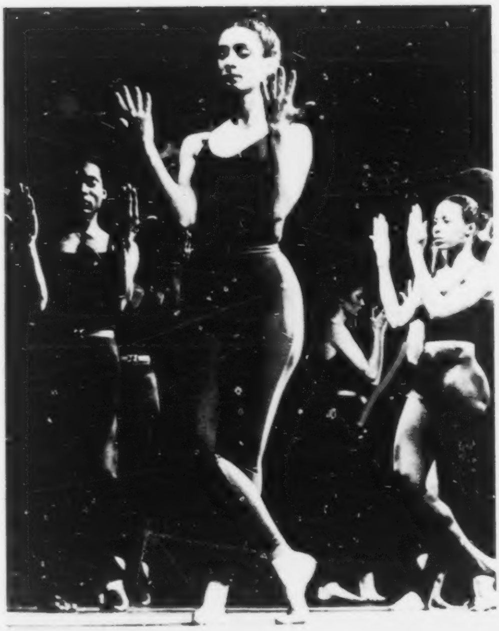
Guatemala's family planning association uses young people as peer counselors in its El Camino multi-service program for teenagers.

A widely used approach is to provide counseling and services in one setting. A leading agency of this type, Brook Advisory Centres in the United Kingdom, concluded that this one-site coordination is "the most efficient and cost-effective way of meeting young people's needs."[75] Brook, which began serving young people in 1964, has many characteristics thought to be important in serving adolescents, such as counselors as part of the clinic team, ability to deal with a range of psycho-sexual problems, confidentiality, outreach to schools and youth clubs, central location, and casual atmosphere.

Brook tries to accommodate drop-ins even though it has been set up on an appointments plan. Many other youth centers, however, have decided to have "open houses" for at least some sessions, based on the known behavior of young people. The French model of an open house stresses a regular time for drop-ins (such as one afternoon per week), group counseling, and wide-ranging discussion. The family planning associations in the Netherlands and in Sweden offer free consultations and do not require appointments. Australia's Action Centre and Israel's Shilo Pregnancy Advisory Service fit this general pattern also and are very successful in attracting a high percentage of young people. The Philippines has three centers especially for adolescents, and educational and clinical programs also focus on teenagers in Peru, Chile, Brazil, Guatemala, Montserrat, Jamaica, British Virgin Islands, Antigua, Nigeria, Indonesia, and Mauritius.[76]

A particularly noteworthy program is that of the Family Planning Association of Hong Kong. A youth volunteer group, SONG (Society of the New Generation), advises on the many-faceted program for teenagers which includes family life education in the schools and in factories, a telephone hotline service, and clinical services. The educational programs are innovative, with much use of the mass media and production of original materials; publicity for these appears in numerous places, from bookmarks to a light box on the pedestrian bridge in the Central District. Success can be measured in part by the 3,000 youth who participate monthly in the educational programs.[77]

A well-publicized model program is The Door in New York City, which uses a multi-activity approach, offering a single-site array of services, such as employment counseling, crafts instruction, sports, and dancing, as well as birth control services. This strategy has been used also in several Latin American settings: APLAFA in Panama, CORA in Mexico, and APROFAM—Guatemala's El Camino. These sites attract both young people who want birth control services but prefer to mask the reason for their visits and others who are lured by a social or recreational offering and, while there, learn about and make use of the family planning services.



A dance class at The Door. This highly successful model program in New York City attracts teenagers with birth control services offered along with many activities popular with adolescents.

A new development which uses the same strategy of providing family planning as part of a wider spectrum of services has surfaced recently in the U.S. More than twelve U.S. cities have on-campus, multi-service clinics which operate within the junior or senior high school and provide birth control information and services (or referral) along with other health services, such as immunizations, physicals, and smoking and weight control programs. These school programs were originally started to help keep pregnant adolescents and school-age mothers in school by providing prenatal care and day-care facilities. A related program, though not operating in the schools, is Jamaica's Women Centre which provides educational opportunities for young pregnant women, day care, and vocational training, in addition to family planning. A significant measure of this program's success was the change it fostered in official school policy to allow pregnant girls to remain in school to pursue education and careers.[78] Such multi-activity and multi-service approaches are costly, but they overcome many of the barriers in reaching and serving adolescents because they incorporate family planning into a broader context of adolescent life.

Barriers to program success

The challenge of reaching adolescents with family planning programs is formidable, given society's conflict about what is appropriate adolescent behavior and the realities of modern life. Cultural traditions in most countries have strongly dictated that sex be limited to the personal/private sphere. Public discussion of the subject is a relatively new phenomenon and extending sexual information purposely to adolescents is an uncomfortable idea to many people. Aside from usurping the personal, familial role, opponents of sex education and family planning services often believe that these promote sexual activity, although all available evidence suggests that this is not true.

Apart from long-standing cultural traditions and taboos, another major barrier in the 1980s in some developed countries is well-organized opposition to sex education, stemming largely from the anti-abortion or conservative religious movements.

While the opposition can be strong, opportunities for reaching young people are great because they have a well-defined subculture. Reaching them—and those who work with them—through media, pop culture, social and recreational institutions, and educational settings is quite feasible. Yet obstacles still remain between the educator/informer/counselor and the young person.

In the sex education area, there are some laws and policies that block certain aspects of in-school education, such as the age (grade) of introduction to the curriculum and content to be covered. Also, local educators are often timid about establishing a solid education program, fearing an apparently strong opposition which is usually much weaker in fact. This timidity is reinforced by more tangible barriers, such as economic contraints, lack of appropriate materials, need to devise new curricula, and lack of trained teachers. The need for teacher training in particular seems to be universally felt.

These barriers and others also serve to limit the effectiveness of programs in allowing a lower quality of instruction. In addition, the typically late introduction of sexual material means that many adolescents have already begun sexual activity before they have an opportunity to discuss and learn about its consequences.

The media taboo against discussion of birth control in programming and advertising is another barrier to the flow of information. Even where laws have changed on this subject, practice and policies perpetuate the old legal traditions.

A major obstacle is the difficulty of reaching groups unlikely to visit a counseling center or clinic. One frequent explanation is the socioeconomic gap between the typical outreach worker and the target population; another is the mobility of the groups. This situation could be improved in part by recruiting more outreach workers from the target groups. Attracting young people to clinic sites is a long-standing problem, though the "Door" model, with its vast array of services, or the on-campus model may alleviate some of this resistance. Commonly, reports from program after program, in country after country, cite failures to attract young males. The goal of reaching youth where they congregate and providing both education and health services is admirable but difficult to achieve, not only in the social/recreational setting but also in the formal school setting. But the few school-based programs associated with a reduction in adolescent birth rates have had just this combination.

In a *Report of a WHO Meeting on Adolescent Sexuality and Reproductive Health: Educational and Service Aspects* following a 1980 meeting in Mexico City, a picture of the worldwide situation emerged, clearly cutting across many cultural lines.[79] Some conclusions were: Adolescent pregnancy is seen as an increasingly serious problem, exacerbated by a mobile population that is becoming more urbanized; the out-of-school group is top priority in need but most difficult to reach; the adolescent is rarely included in program planning; there is a shortage of personnel trained in adolescent health care; there is a dearth of in-country data on adolescent reproductive behavior and of appropriate program materials; opposition exists to sex education in schools; legal constraints limit provision of information and medical services; and—the most often stated need—the community must better understand, support, and actively participate in addressing the issue of adolescent reproductive health and in demanding action.

Factors contributing to success

Implementers of successful programs have indicated what they consider essential elements of this success, as reported by the International Clearinghouse on Adolescent Fertility. These include: conducting a preliminary needs assessment, gaining parental and community support, adequate funding, flexible and dynamic program designs to meet changing needs, skilled and well-trained personnel, availability of appropriate printed and audiovisual materials, cooperation with other agencies, active participation of young people, publicity, and innovative teaching techniques.

Success in family planning service programs for adolescents has been identified as well: publicizing the availability of services, convenient location, guaranteed confidentiality, afternoon clinic hours at times when adolescents are not required at school or expected home, brief admission procedures with a minimum of red tape, appointment for services within one week of initial contact, services free or at nominal cost, positive staff attitudes, with close attention to reducing embarrassment, personalized and friendly counseling, choice of method based on the adolescent's own preferences and patterns of sexual activity in addition to medical considerations, instruction in a backup method in case of discontinuation of the primary method, and frequent followup visits.[80]

Program trends

Family planning information and service programs are increasing and becoming more suitable for adolescent needs. Progress seems to be greater in countries where programs have already been established and accepted by the adult population. Policymakers and leadership groups typically have been readied for such programs by highly visible conferences and meetings on the subject in advance of program implementation.

Programs evolving in the mid-1980s seem to have greater participation by the target audience, adolescents themselves, which helps ensure relevance and use. Audiovisual aids within programs and the media, or to promote programs, are becoming more common, perhaps indispensable. Generally, family life education programs are becoming less formal, expanding beyond the classroom setting into other locations suitable for learning experiences. Even clinic facilities are going to where young people are—in school, at play, and at work.

Conclusion: Trends and Implications

Adolescent fertility is perceived and addressed differently in various parts of the world. Thus, attempts to affect it or ameliorate its negative consequences must vary according to cultural realities.

Some cautious generalizations can be made about three distinct, current patterns. The *first*, common in the developing world, is characterized by early age at marriage or consensual union and early and frequent childbearing. Cultural values, especially in Asia, prohibit premarital sexual activity and premarital pregnancy is infrequent or likely to lead to socially sanctioned consensual unions, as in Latin America and evidently in parts of sub-Saharan Africa. Contraceptive use is low, but slowly rising. When abortion is sought, usually by young unmarried girls, it is usually illegal, hence clandestine and potentially dangerous.

The *second*, perhaps polar opposite

pattern, exists primarily in developed countries. It is characterized by the onset of sexual experience, often out of wedlock, in the mid- to late teens. Though contraceptives are available, their use is low among unmarried sexually active teenagers, except in some Western European countries,[81] and there is a high incidence of unintended nonmarital pregnancy, significant recourse to abortion (largely legal and safe), late age at marriage, and very low fertility.

The *third* is a middle ground of changing patterns prompted largely by socioeconomic development. With rapid growth of large cities, typical of sub-Saharan Africa, for example, women's economic and employment opportunities are expanding, and age at marriage and first birth is being delayed. The traditional restraints of the first pattern are still evident but less controling, and, following the second pattern, premarital sexual activity and pregnancy are increasing, as is recourse to abortion. However, overall fertility is beginning to decline as contraception is used more and more, except so far in sub-Saharan Africa.

Some generalizations can even be made about all of the world's adolescents. Worldwide, the absolute number of adolescents aged 10-19 will continue to increase well into the 21st century, with the fastest growth occurring in Africa. Teenage sexual activity will continue, probably beginning at earlier ages, often out of wedlock, and among increasing proportions of adolescents. The bio-social gap, between sexual debut and marriage and/or adulthood, will become more widespread with increased education for women and the longer time required to train for jobs or generally to function adequately in the world of the future.

Given these likely developments, there will be more adolescent pregnancy and fertility unless family planning services are readily available and used by this group.

This is a big "if." However, as the 1984 International Population Conference demonstrated, most countries now accept and support the concept of family planning and services are becoming more widely available. These will increasingly reach the teenage population.

A young couple just married in India. Early marriage is still common in the developing world but with modernization, the gap between sexual debut and marriage is likely to become more widespread.

The incidence of adolescent abortion will probably increase, and—depending on how much—could cause further decreases in overall birth rates.

The increasing availability of reproductive health care services emphasizing early pregnancy detection and subsequent care can improve the outcomes of adolescent pregnancy, whether through adequate prenatal care or early, safe abortion.

Policies and programs can assist this trend if extended over a wide array of activities, supported by a clear understanding of why they are beneficial. To begin, attempts to provide adolescents with fertility regulation information need to be regarded not as attempts to subvert public morals but as what they are: forthright efforts to alleviate what is becoming a major health and social problem. Important elements of such programs are reducing adolescents' reliance on abortion through preventive measures and, further, helping adolescents to understand the benefits of delayed sexual activity, which would also serve to reduce untimely pregnancies.

Sex education, if it is to be relevant, should move beyond facts to provide a basis for intelligent, informed decision-making. This was well put in Australia in 1977, in the *Final Report of the Royal Commission on Human Relationships:*

> "There is need for early and continuous sex education and for an education program which will help young people to be responsible to themselves and to each other and to decide to act within knowledge, not in fear and ignorance."

However, many laws and policies still in force throughout the world inhibit efforts to provide adolescents with the education and information needed if they are to act "responsibly" with regard to decisions on reproductive choices, as is called for by human rights documents. Without appropriate education, adolescents will learn from the least accurate sources—media and their peers.

Experience is beginning to reveal that "what works" is reaching out to adolescents where they are—in schools, recreational centers, and at the workplace. Single or one-time projects will not suffice. Reaching young people by a variety of means is enhanced by increasing public discussion of the issue among many elements of the community—policymakers, researchers, program planners, parents.

Sexuality can be put in its proper context as a part of human experience. If seen as taboo or isolated in a special class or separate place, the subject is difficult or awesome for young people—and adults—to discuss. Integrating sexuality and fertility decisions into the natural framework of adolescent life is especially important for young women who need to understand how family formation plans relate to other future concerns, such as education and employment.

Innovative programs geared to youth subcultures and interests are promising strategies and must at the same time be acceptable to the larger cultures in which young people move. Thus, "family life" education has replaced "sex" education and a new U.S. program, "Life Planning" (family planning and employment planning together), has demonstrated a favorable response. However, important objectives cannot fall out during the innovating process: sexuality must remain part of family life and family planning a part of life planning. Too often, purpose has been lost as the price for acceptance of programs.

Adult "gatekeepers" in a position to regulate the flow of information and services to young people can be helped to understand the problems of too-early childbearing. Very importantly, parents can gain insight and information about appropriate roles they may take to assist their children.

If adolescents remain sexually active, society's gatekeepers must allow them to use family planning services if early pregnancy is to be avoided. This means dealing with the predominant double message—many cultural forces, such as the media, encouraging sexual activity and many others, such as parents, saying "absolutely not." Currently, an explosive situation exists with many of the world's young people, particularly the unmarried: much encouragement to be sexually active and an actual or moral prohibition against birth control. Pregnancy and childbearing should not be used as punishment for sexual activity.

Access to preventive information and services will most safely help sexually active adolescents to avoid untimely and unwanted pregnancies. To a great extent, abortion exists because of a failure in pregnancy prevention. But since no contraceptive method short of sterilization is 100 percent failure-proof, the need for abortion will remain. In developed countries in particular, the suspicion of an unwanted pregnancy, prompting a search for abortion, frequently leads young people to the reproductive health care system for the first time, after which they are likely to adopt preventive measures.

In sum, society's march into the 21st century has eroded many traditional rites of passage and moral values related to sexuality and the assumption of the adult role of parenthood. Society must find new rites of passage to replace the old and provide new guidance about its values, given the changing biological and social realities of our time. Both are now missing and both are now needed. ☐

References

1. Chui, James W., "Policies and Programmes on Adolescent Fertility in Developing Countries: An Integrated Approach," United Nations Fund for Population Activities (UNFPA), New York, February 1978, mimeo, p. .5.
2. World Health Organization (WHO), *Health Problems of Adolescence,* Technical Report Series No. 308 (Geneva: 1965) p. 7.
3. Banister, Judith, "An Analysis of Recent Data on the Population of China," *Population and Development Review,* Vol. 10, No. 2 (June 1984) p. 248.
4. McCarthy, James, *Differentials in Age at First Marriage,* Cross National Summaries No. 19 (London: World Fertility Survey, 1982) Table 1.
5. National Center for Health Statistics (NCHS), "Advance Report of Final Natality Statistics, 1982," *Monthly Vital Statistics Report,* Vol. 33, No. 6, Supplement, September 1984, Table 3, p. 15.
6. Chui, "Policies and Programmes on Adolescent Fertility in Developing Countries," pp. 19-20.
7. Westoff, Charles, Gerard Calot, and Andrew Foster, "Teenage Fertility in Developed Nations: 1971-1980," *International Family Planning Perspectives,* Vol. 9, No. 2 (June 1983) pp. 45-50.
8. Hofmann, Adele D., "Contraception in Adolescence: A Review 1. Psychosocial Aspects," *Bulletin of the World Health Organization,* Vol. 62, No. 1 (1984) p. 152.
9. NCHS, "Natality Statistics, 1982," Table 17, *Vital Statistics of the United States 1970,* Vol. 1, *Natality* (Rockville, Md: 1974); France, Ministry of Economics and Finances, *Annuaire Statistique de la France 1982: Resultats de 1981* (Paris: 1982) Table 1.04-5; Registrar General, *Birth Statistics: A Review of the Registrar General on Births and Patterns of Family Building in England and Wales, 1982* (London: Her Majesty's Stationery Office, 1984) Table 3.1.
10. Darabi, Katherine F., Susan Gustavus Philliber, and Allan Rosenfield," "A Perspective on Adolescent Fertility in Developing Countries," *Studies in Family Planning,* Vol. 10, No. 10 (October 1979) p. 302.
11. Hofmann, "Contraception in Adolescence," pp. 156-157.
12. Tietze, Christopher, *Induced Abortion: A World Review, 1983,* 5th ed. (New York: The Population Council, 1983) Table 4.
13. Tietze, Christopher, *Induced Abortion: 1979,* 3rd ed. (New York: The Population Council, 1979) p. 43.
14. Alan Guttmacher Institute, *Teenage Pregnancy: The Problem That Hasn't Gone Away* (New York: 1981) pp. 7, 16; Stephanie J. Ventura, Selma Taffel, and William E. Mosher, "Estimates of Pregnancies and Pregnancy Rates for the United States, 1976-81," *Public Health Reports,* Vol. 100, No. 1 (January-February 1985) pp. 31-34.
15. International Fertility Research Program, *Abortion in Latin America* (Research Triangle Park, NC: 1980) Table III.
16. Gyepi-Garbrah, Benjamin, Douglas J. Nichols, Gottlieb M.K. Kpedekpo, *Adolescent Fertility in Sub-Sahara Africa: An Overview* (Chestnut Hill, MA: The Pathfinder Fund, 1985) pp. 17-20.
17. "Blame Illegal Abortion for 26% of Pregnancy Mortality in Bangladesh," *International Family Planning Perspectives,* Vol. 8, No. 2 (June 1982) pp. 72-73.
18. Chui, "Policies and Progammes on Adolescent Fertility in Developing Countries," p. 5.
19. Darabi, Philliber, and Rosenfield, "Adolescent Fertility in Developing Countries," p. 300.
20. Bury, Judith, *Teenage Pregnancy in Britain* (London: Birth Control Trust, 1984) p. 32; Benjamin Gyepi-Garbrah, *Adolescent Fertility in Nigeria* (Chestnut Hill, MA: The Pathfinder Fund, 1984) pp. 51-52.

21. Huber, J., "Kontrazeption bei Jungendlichen," *Therapeutische Unschau,* Vol. 39, No. 6 (June 1982) pp. 469-471; P. Hubinont, "Problematique de la Contraception chez les Adolescentes," *Contraception, Fertilite, Sexualite,* Vol. 10, No. 4 (April 1982) p. 217-222; Alan Guttmacher Institute, *Teenage Pregnancy,* p. 6; Gyepi-Garbrah, *Adolescent Fertility in Nigeria,* p. 34; Marcia L. Galang, "Coping with Adolescent Fertility," *Initiatives in Population,* Vol. 7, No. 2 (1984).
22. Khoury, Mounir, "The Problem of Sex Behavior and Fertility Control in Lebanon with Special Reference to Lebanese Youth," unpublished paper prepared for the IPPF International Consultation on Adolescent Fertility Regulation Services, Bellagio, Italy, July 25-30, 1983, p. 2.
23. Alvarez, Vasquez L., "La Fecundidad y la Juventud," *Revista Cubana de Administracion de Salud,* Vol. 7, No. 4 (October-December 1981) pp. 400-409.
24. A.C. Nielson Company, Inc., *1984 National Audience Demographics* (Northbrook, IL: 1984); Statistical Research, Inc., *Radio's All Dimension Audience Research,* Vol. 1, No. 24 (Westfield, NJ: 1981); Bradley Greenberg, Robert Abelman, and Kimberley Neuendorf, "Sex on the Soap Operas: Afternoon Delight," *Journal of Communication,* Summer 1981.
25. Ashken, I. and A. Soddy, "Study of Pregnant School-Age Girls," *British Journal of Family Planning,* Vol. 6, No. 3 (October 1980) pp. 77-82; Wendy Baldwin, "Adolescent Childbearing Today and Tomorrow," statement prepared for U.S. Senate Human Resources Committee, June 14, 1978, updated in "Adolescent Pregnancy and Childbearing—Rates, Trends, and Research Findings from the CPR, NICHD," November 1982, unpublished paper, p. 15; M. Bermudez, C. Raabe, and M. Ortiz, *Embarazo entre les Adolescentes: Resultados de una Encuesta Realizada en la Cuidad de Liman, 1980* (San Jose, Costa Rica: Asociacion Demografica Costaricense, Departamento de Investigaciones Sociodemograficas, 1982).
26. Baldwin, "Adolescent Pregnancy and Childbearing," pp. 12, 15-16.
27. Dryfoos, Joy G., "A Strategy for Preventing Unintended Teenage Childbearing," *Family Planning Perspectives,* Vol. 16, No. 4 (July/August 1984) p. 193.
28. Alan Guttmacher Institute, *Teenage Pregnancy,* p. 20.
29. Baldwin, "Adolescent Pregnancy and Childbearing," p. 13; G. Tang, "Abortion in Single Girls in Hong Kong," *Journal of Adolescent Health Care,* Vol. 2, No. 3 (March 1982) pp. 213-216; Y. Wong and S. Ratnam, "Adolescent Sexuality in Singapore," *Concern,* Vol. 18 (July-September 1980) pp. 10-11; P. Muriuki, "Background Paper on the Situation Relating to the Provision of Adolescent Fertility Regulation Services in the Africa Region," unpublished paper prepared for IPPF International Consultation on Adolescent Fertility Regulation Services, Bellagio, Italy, July 25-30, 1983; O.A. Lapido et al., *Sexual Behavior, Contraceptive Practice and Reproductive Health Among the Young Unmarried Population in Ibadan, Nigeria: Final Report* (Research Triangle Park, NC: Family Health International, 1983); P. Pradervand, "Seychelles Tackles Teenage Pregnancy Problems," *People,* Vol. 8, No. 4 (1981) pp. 36-37; T. Jagdeo, "Adolescent Fertility Regulation in the Caribbean: Problems, Barriers, and Strategies for Change," unpublished paper prepared for IPPF International Consultation, 1983; C. Carpenter-Yaman, "Family Size and Fertility-Related Knowledge and Attitudes of Turkish Youth in Villages with Differential Exposure to Family Planning Programs," University of Michigan, 1979, doctoral dissertation; I. Rey-Stocker, "Sexualite, Contraception et Grossesse chez l'Adolescente," *Gynakologische Rundschau,* Vol. 23, No. 2 (1983) pp. 108-120; R. Wermelinger, "Attitude a Adopter Face a une Adolescente Faisant une Demande de Contraception," *Revue Medicale de la Suisse Romande,* Vol. 103, No. 5 (May 1983) pp. 403-406; R. Frydman, J. Berardi, and G. Helvin, "Les Adolescentes et leur Contraception," *Archives Francaises de Pediatrie,* Vol. 37, Supplement 1 (1980) pp. 25-28; R. Thexton, "Who Needs Counseling?" Proceedings of the Meeting on Abortion Counseling, London, July 5, 1978 (London: Birth Control Trust, 1980) pp. 22-26.
30. Jandl-Jager, E., *Adolescent Fertility and Family Planning: A Review of Selected Research Studies* (London: International Planned Parenthood Federation, 1982); T. Jagdeo and P. Tirbani, *Adolescent Pregnancy in Grenada: A Qualitative Study* (Antigua: Caribbean Family Planning Affiliation, 1981); Lapido et al., *Sexual Behavior . . . . Among the Young Unmarried Population in Ibadan, Nigeria;* Carpenter-Yaman, "Family Size and Fertility-Related Knowledge and Attitudes of Turkish Youth"; D. Baxter, *Male Sexuality Survey: Knowledge and Attitudes of Toronto Adolescents* (Toronto: Family Planning Services, Department of Public Health, 1982).
31. Luker, Kristin, *Taking Chances: Abortion and the Decision Not to Contracept* (Berkeley: Uni-

versity of California Press, 1975).

32. Mandal, T., "Problems of Unmarried Mothers," *Journal of the Indian Medical Association,* Vol. 79, No. 5-6 (September 1982) pp. 81-86.
33. Oronsaye, A. and G. Odiase, "Attitudes Toward Abortion and Contraception Among Nigerian Secondary School Girls," *International Journal of Gynaecology and Obstetrics,* Vol. 21, No. 5 (October 1983) pp. 423-426; J. Silva, R. Samento, and A. Faundes, "Gravidez na Adolescencia," *Journal Brasileiro de Ginecologia,* Vol. 90, No. 5 (November 1980) pp. 283-287.
34. Gemme, R., "Grossesses Premaritales Indesines," *Contraception, Fertilite, Sexualite,* Vol. 12, No. 2 (February 1984) pp. 429-433; T. Jagdeo, "Adolescent Fertility Regulation in the Caribbean"; Arnoldo Gomensoro and Tirbani Jagdeo. *Adolescent Sexuality: A Problem of the Adults* (New York: International Planned Parenthood Federation/Western Hemisphere Region, 1984) p. 19.
35. Zabin, L. and S. Clark, "Why They Delay: A Study of Teenage Family Planning Clinic Patients," *Family Planning Perspectives,* Vol. 13, No. 5 (September/October 1981) pp. 206, 207; Gemme, "Grossesses Premaritales Indesines"; D. Grenon-Plante, "L'Adolescente Enceinte," *Infirmiere Canadienne,* Vol. 24, No. 3 (March 1982) pp. 33-36; Jagdeo, *Adolescent Pregnancy in Grenada;* M. Ezimokhai, et al., "Response of Unmarried Adolescents to Contraceptive Advice and Service in Nigeria," *International Journal of Gynaecology and Obstetrics,* Vol. 19 (1981) pp. 481-485.
36. Khoury, "Sex Behavior and Fertility Control in Lebanon," pp. 1-9; *Population Education News,* Vol. 10, No. 2 (February 1983) pp. 2-3; S. Sarwono, "The Problem of Adolescent Fertility in Indonesia," unpublished paper prepared for IPPF International Consultation, 1983; Muriuki, "Adolescent Fertility Regulation Services in the Africa Region"; A. Corradini, "Adolescents and the Family Advice Centre in Italy," *Planning Familiale en Europe, Bulletin d'Information Regional,* Vol. 12, No. 1 (April 1983) pp. 13-20.
37. Boldt, E., L. Roberts, and A. Latif, "The Provision of Birth Control Services to Unwed Minors: A National Survey of Physician Attitudes and Practices," *Canadian Journal of Public Health,* Vol. 73, No. 6 (November/December 1982) pp. 392-395.
38. Lonchambon, P. and P. Plat, "Biologie—Contraception—Adolescence: De la Physiologie de la Puberte a la Physio-pathologie Eventuelle de la Contraception au Cours de la Formation," *Infirmete Francaise,* Vol. 236 (June 1982) pp. 21-30.
39. WHO, *Health Needs of Adolescents,* Technical Report Series No. 609 (Geneva: 1979) p. 17; Benjamin Gyepi-Garbrah, *Adolescent Fertility in Sierra Leone* (Chestnut Hill, MA: The Pathfinder Fund, 1984) p. 55; K. Edstrom, "Sexuality-Related Issues in Adolescence," WHO, Manila, 1980; *Population,* UNFPA Newsletter, Vol. 10, No. 6 (June 1984) p. 2.
40. Grenon-Plante, "L'Adolescente Enceinte"; Alan Guttmacher Institute, *Teenage Pregnancy,* p. 29; Brook Advisory Centres, *The Consequences of Teenage Sexual Activity* (London: 1981) pp. 24-30; I. Pederson, "Outcome of Pregnancies: Abortion and Birth," in Danish Family Planning Association, *Adolescent Sexuality: Report on a Workshop on Knowledge, Attitude, and Behavior held in Denmark, September 6-10, 1982* (Copenhagen: 1983) pp. 100-107; Ward Rinehart and Adrienne Kols, with Sidney H. Moore, "Healthier Mothers and Children Through Family Planning," *Population Reports,* Series J, No. 27 (May-June 1984).
41. Deschamps, J. and G. Valantin, "Pregnancy in Adolescence: Incidence and Outcome in European Countries," *Journal of Biosocial Science,* Vol. 5 supplement (1978) pp. 101-116; S. Bremberg, "Pregnancy in Swedish Teenagers: Perinatal Problems and Social Situations," *Scandinavian Journal of Social Medicine* (1977) pp. 5, 15.
42. Ngoka, W.M. and J.K.G. Mati, "Obstetric Aspects of Adolescent Pregnancy," *East African Medical Journal,* Vol. 57, No. 2 (February 1980).
43. Cates, Willard, Jr., and Christopher Tietze, "Standardized Mortality Rates Associated with Legal Abortion: United States, 1972-1975," *Family Planning Perspectives,* Vol. 10, No. 2 (March/April 1978) p. 109.
44. Ratnam, S., R. Prasad, and Poneswari, "Abortion in the Adolescent," unpublished paper prepared for IPPF International Consultation, 1983, pp. 1-15.
45. Brook Advisory Centres, *Consequences of Teenage Sexual Activity.*
46. Alan Guttmacher Institute, *Teenage Pregnancy,* p. 29.
47. Baldwin, "Adolescent Pregnancy and Childbearing," p. 8.
48. *Ibid.,* p. 9; Bury, *Teenage Pregnancy in Britain,* p. 22.
49. Gyepi-Garbrah, *Adolescent Fertility in Sierra Leone,* p. 43; Gyepi-Garbrah, Nichols, and Kpe-

dekpo, *Adolescent Fertility in Sub-Sahara Africa,* pp. 30-31.

50. Nsekela, Christine, Executive Director, Family Planning Association of Tanzania, November 12, 1984, personal communication; Gyepi-Garbrah, *Adolescent Fertility in Nigeria,* pp. 41-42; Jagdeo, "Adolescent Fertility Regulation in the Caribbean"; Bermudez, Barbe, and Ortiz, *Embarazo entre les Adolescentes.*
51. Card, J.J. and Lauress Wise, "Teenage Mothers and Teenage Fathers: The Impact of Early Childbearing on the Parents' Personal and Professional Lives," *Family Planning Perspectives,* Vol. 10, No. 4 (July/August 1978) p. 204.
52. Alan Guttmacher Institute, *Teenage Pregnancy,* p. 35.
53. Baldwin, "Adolescent Pregnancy and Childbearing," p. 11; Alan Guttmacher Institute, *Teenage Pregnancy,* p. 32; Kristin A. Moore, *Facts at a Glance,* unpublished document prepared for the Charles Stewart Mott Foundation, n.d.
54. Gyepi-Garbrah, *Adolescent Fertility in Nigeria,* p. 28
55. European Court of Human Rights, *Case of Kjeldsen, Busk, Madsen and Pedersen: Judgement* (Strasbourg: Council of Europe, December 1976) pp. 22, 23.
56. Paxman, John M. and Ruth Jane Zuckerman, *Adolescent Health and the Law* (Geneva: WHO, forthcoming) chapter 2.
57. *Ibid.*
58. Holder, Angela R., *Legal Issues in Pediatric and Adolescent Medicine* (New York: Wiley, 1977) p. 139.
59. Hunt, William B., "Adolescent Fertility: Risks and Consequences," *Population Reports,* Series J, No. 10 (1976) p. J-176.
60. Paxman, John M., "Site Visit Report: Kenya, Sierra Leone, Tanzania," November 3-20, 1984.
61. WHO, "Report of a WHO Meeting on Adolescent Sexual Reproductive Health: Educational and Service Aspects," Mexico City, April-May 1980, Doc. No. MCH/RHA/81.1, mimeo, Annex A, p. 31.
62. Alan Guttmacher Institute, *Teenage Pregnancy;* General Mills, Inc., *Raising Children in a Changing Society* (Minneapolis: 1977).
63. McGrath, Patricia L., *A Perspective on Adolescent Fertility in Developing Countries: Policy and Program Implications* (Arlington, VA: Medical Services Consultants, Inc., 1979).
64. International Clearinghouse on Adolescent Fertility, Center for Population Options, *An Analysis of the Nature and Level of Adolescent Fertility Programming in Developing Countries* (Washington, DC: 1984).
65. Gallup Organization, Inc., *Attitudes Toward Contraception: Study Conducted for the American College of Obstetricians and Gynecologists* (Princeton, NJ: March 1985); S. Moses and C. Praveena, "Sex Education—Its Need and Attitude of Adolescents," *The Journal of Family Welfare,* Vol. 20, No. 2 (December 1983) p. 37; J.D. Sherris and W.F. Quillin, "Population Education in the Schools," *Population Reports,* Series M, No. 6 (1982) p. M-212.
66. WHO, *Family Life Education and Services Available to Adolescents: A Cross-Cultural Survey* (Geneva: 1980) pp. 9, 29; International Planned Parenthood Federation, *Open File,* June 29, 1984; S.E. Fraser, "Sex Education? Population Education? A New School Programme for China's Adolescents," *British Journal of Sexual Medicine,* Vol. 10, No. 97 (June 1983) pp. 27-32.
67. Kellogg, Edmund H., David K. Kline, and Jan Stepan, *The World's Laws and Practices on Population and Sexuality Education,* Law and Population Monograph Series No. 25 (Medford, MA: Law and Population Program, Fletcher School of Law and Diplomacy, 1975) pp. 48-56; Edmund H. Kellogg and Jan Stepan, "Legal Aspects of Sex Education," *American Journal of Comparative Law,* Vol. 26 (1978) p. 573.
68. *Newsletter 43,* Family Planning Association of Hong Kong, Spring 1984, p. 3.
69. International Clearinghouse on Adolescent Fertility, Center for Population Options, *Project Inventory* (files).
70. Jovero, Edgar, "Dealing with Adolescents' Growing Up Pains," *PCF Media Service,* Vol. 6, No. 10 (1984); Kjell Knutsen, "Towards a Better Life for the Young Workers: An Education Project in Malaysia," *IPPF East and South-East Asia and Oceania Region Concern,* No. 10 (1978) pp. 1-2; M.C. Sharma and S.C. Dhani, "Gyanda: Young Women's Development Programme," *Population Education News,* Vol. 7, No. 2 (February 1980) pp. 3-9.
71. All Africa Conference of Churches, *A Report of the Ecumenical Foundation on Adolescent Fertility Management* (Nairobi: August 1980).

72. "Russians Sampling Sex Education," *The Washington Post*, December 21, 1975, p. B12.
73. "Bilan encourageant pour la campagne publique en faveur de la contraception," *Le Monde*, October 3, 1982.
74. "Approaches to Selected Groups," *IPPF Europe*, 1979, pp. 14-15.
75. Cossey, Dilys, *Safe Sex for Teenagers* (London: Brook Advisory Centres, 1978) p. 22.
76. "Approaches to Selected Groups," pp. 13-26; IPPF, *Open File*, January 22, 1982, June 1982; Shilo Pregnancy Advisory Service, *Annual Report 1981* (Jerusalem: 1981); International Clearinghouse on Adolescent Fertility, *Project Inventory* (files); Marilyn Edmunds and John M. Paxman, "Early Pregnancy and Childbearing in Guatemala, Brazil, Nigeria and Indonesia: Addressing the Consequences," *Pathpapers* No. 11 (Chestnut Hill, MA: The Pathfinder Fund, 1984) pp. 5-8.
77. International Clearinghouse on Adolescent Fertility, *Project Inventory*.
78. McNeil, Pamela, et al., "The Adolescent Mothers Project in Jamaica," *Pathpapers* No. 7 (Chestnut Hill, MA: The Pathfinder Fund, 1980).
79. WHO, "Report of a WHO Meeting on Adolescent Sexual Reproductive Health."
80. Hofmann, "Contraception in Adolescence," p. 159.
81. Jones, Elise F. et al., "Teenage Pregnancy in Developed Countries: Determinants and Policy Implications," *Family Planning Perspectives*, Vol. 17, No. 2 (March/April 1985) pp. 53-63.

Selected Bibliography

The authors of this *Population Bulletin* suggest the following for those interested in reading more on issues related to adolescent fertility.

Alan Guttmacher Institute, *Teenage Pregnancy: The Problem That Hasn't Gone Away* (New York: 1981).

Baldwin, Wendy, "Adolescent Childbearing Today and Tomorrow," statement prepared for U.S. Senate Human Resources Committee, June 14, 1978, updated in "Adolescent Pregnancy and Childbearing—Rates, Trends, and Research Findings from the CPR, NICHD," November 1982, unpublished paper.

Bogue, Donald J., et al. (eds.), *Adolescent Fertility* (Chicago: Community and Family Study Center, University of Chicago, 1977).

Bury, Judith, *Teenage Pregnancy in Britain* (London: Birth Control Trust, 1984).

Chui, James W., "Policies and Programmes on Adolescent Fertility in Developing Countries: An Integrated Approach," United Nations Fund for Population Activities, New York, February 1978, mimeo.

Edmunds, Marilyn and John M. Paxman, "Early Pregnancy and Childbearing in Guatemala, Brazil, Nigeria and Indonesia: Addressing the Consequences," *Pathpapers* No. 11 (Chestnut Hill, MA: The Pathfinder Fund, September 1984).

Furstenberg, Frank F., Jr., Richard Lincoln, and Jane Menken (eds.), *Teenage Sexuality, Pregnancy and Childbearing* (Philadelphia: University of Pennsylvania Press, 1981).

Gomensoro, Arnoldo and Tirbani P. Jagdeo, *Adolescent Sexuality: A Problem of the Adults* (New York: International Planned Parenthood Federation/Western Hemisphere Region, 1984).

Gyepi-Garbrah, Benjamin, with Douglas J. Nichols and Gottlieb M.K. Kpedekpo, *Adolescent Fertility in Sub-Sahara Africa: An Overview* (Chestnut Hill, MA: The Pathfinder Fund, 1985).

Hofmann, Adele D., "Contraception in Adolescence: A Review 1. Psychosocial Aspects," *Bulletin of the World Health Organization*, Vol. 62, No. 1 (1984) pp. 152-162.

Hunt, William B., "Adolescent Fertility: Risks and Consequences," *Population Reports*, Series J, No. 10 (1976).

International Clearinghouse on Adolescent Fertility, *An Analysis of the Nature and Level of Adolescent Fertility Programming in Developing Countries* (Washington, DC: Center for Population Options, 1984).

Jones, Elise F., et al., "Teenage Pregnancy in Developed Countries: Determinants and Policy Implications," *Family Planning Perspectives,* Vol. 17, No. 2 (March/April 1985) pp. 53-63.

Kellogg, Edmund H. and Jan Stepan, "Legal Aspects of Sex Education," *American Journal of Comparative Law,* Vol. 26, No. 4 (1978) pp. 573-608.

Kirby, Douglas, *Sexuality Education: An Evaluation of Programs and Their Effects* (An Executive Summary) (Santa Cruz, CA: Network Publications, 1984).

McGrath, Patricia L., *A Perspective on Adolescent Fertility in Developing Countries: Policy and Program Implications* (Arlington, VA: Medical Services Consultants, Inc., 1979).

McKay, Jennifer (ed.), *Adolescent Fertility: Report of an International Consultation, Bellagio 1983* (London: International Planned Parenthood Federation, 1983).

Moore, Kristin and Martha Burt, *Private Crisis, Public Cost: Policy Perspectives on Teenage Childbearing* (Washington, DC: The Urban Institute Press, 1982).

Parkes, A.S., et al. (eds.), "Fertility in Adolescence" (Proceedings of the Seventh IPPF Biomedical Workshop), *Journal of Biosocial Science,* Supplement No. 5 (Cambridge, England: Galton Foundation, 1978).

Paxman, John M., *Law, Policy and Adolescent Fertility: An International Overview* (London: International Planned Parenthood Federation, 1984).

Rinehart, Ward and Adienne Kols, with Sidney H. Moore, "Healthier Mothers and Children Through Family Planning," *Population Reports,* Series J, No. 27 (May-June 1978).

Westoff, Charles, Gerard Calot, and Andrew Foster, "Teenage Fertility in Developed Nations: 1971-1980," *International Family Planning Perspectives,* Vol. 9, No. 2 (June 1983) pp. 45-50.

World Health Organization (WHO), "Report of a WHO Meeting on Adolescent Sexual Reproductive Health: Education and Service Aspects," Mexico City, 28 April-2 May, 1980, Doc. No. MCH/RHA/81.1 (Geneva: 1981) mimeo.

Recent Population Bulletins and Bulletin Slides

Population Bulletin prices, *prepaid,* are:
Single Copy—$4.00
Bulk copies:

2-10	$3.00 each
11-50	$2.50 each
51 or more	$2.00 each

Sets of 35 mm colored slides for figures and tables appearing in each *Bulletin* are available at the **additional** prices shown in parentheses.

Note: *Inside the United States,* add $1.00 for handling. *Outside the United States,* add 25 percent to the cost of Bulletins and slides ordered to cover postage and handling.

Volume 36 (1981-82)

No. 1 *Cuba: The Demography of Revolution,* by Sergio Diaz-Briquets and Lisandro Perez (14 slides, including frontispiece map, $7.00)

No. 2 *U.S. Women at Work,* by Linda J. Waite (13 slides, $6.50)

No. 3 *World Food Resources and Population: The Narrowing Margin,* by Lester R. Brown (16 slides, $8.00)

No. 4 *India's Population: Second and Growing,* by Pravin Visaria and Leela Visaria (19 slides, including map, $9.50)

No. 5 *The Changing U.S. Farmland Scene,* by Michael Brewer (12 slides, $6.00)

No. 6 *Eastern Europe: Pronatalist Policies and Private Behavior,* by Henry P. David (16 slides, including map, $8.00)

Volume 37 (1982)

No. 1 *The World Fertility Survey: Charting Global Childbearing*, by Robert Lightbourne Jr. and Susheela Singh, with Cynthia P. Green (21 slides, including map, $10.50)

No. 2 *U.S. Population: Where We Are; Where We're Going*, by Population Reference Bureau staff and guest experts (27 slides, $13.50)

No. 3 *The Soviet Union: Population Trends and Dilemmas*, by Murray Feshbach (22 slides, including map, $11.00)

No. 4 *Black America in the 1980s*, by John Reid (20 slides, $10.00)

Volume 38 (1983)

No. 1 *Third World Family Planning Programs: Measuring the Costs*, by Nancy Yinger, Richard Osborn, David Salkever, and Ismail Sirageldin (13 slides, $6.50)

No. 2 *China: Demographic Billionaire*, by H. Yuan Tien (17 slides, including map, $8.50)

No. 3 *U.S. Hispanics: Changing the Face of America*, by Cary Davis, Carl Haub, and JoAnne Willette (21 slides, including frontispiece map, $10.50)

No. 4 *The Changing American Family*, by Arland Thornton and Deborah Freedman (12 slides, $6.00)

Volume 39 (1984)

No. 1 *Planet Earth 1984-2034: A Demographic Vision*, by Leon F. Bouvier (9 slides, $4.50)

No. 2 *Israel's Population: The Challenge of Pluralism*, by Dov Friedlander and Calvin Goldscheider (15 slides, including map, $7.50)

No. 3 *The Business of Demographics*, by Cheryl Russell

No. 4 *Delayed Childbearing in the U.S.: Facts and Fictions*, by Wendy H. Baldwin and Christine Winquist Nord (17 slides, $8.50)

No. 5 *Understanding U.S. Fertility: Findings from the National Survey of Family Growth, Cycle III*, by William F. Pratt et al. (30 slides, $15.00)

Volume 40 (1985)

No. 1 *Sub-Saharan Africa: Population Pressures on Development*, by Thomas J. Goliber (17 slides, $8.50)

No. 2 *Adolescent Fertility: Worldwide Concerns*, by Judith Senderowitz and John M. Paxman (13 slides, $6.50)

Send orders with checks to: Population Reference Bureau, Inc.
Circulation Department
P.O. Box 35012
Washington, D.C. 20013

Population Reference Bureau, Inc.

The PRB gathers, interprets, and disseminates information on the facts and implications of national and world population trends. Founded in 1929, it is a private, nonprofit educational organization that is supported by grants and contracts, individual and corporate contributions, memberships, and sales of publications. It consults with other groups in the United States and abroad, operates information and library services, and issues the publications described on the outside back cover. The PRB also assists the development of population education through formal and nonformal programs.

Officers

*Mildred Marcy, *Chair of the Board*
*Thomas W. Merrick, *President*
*Raymond H. Potvin, *Secretary of the Board*
*Bert T. Edwards, *Treasurer of the Board*

Trustees

Jodie T. Allen
Brent Ashabranner
*Michael P. Bentzen
*John C. Beyer
Norman E. Borlaug
Wallace Bowman
John H. Bryant
Marriner C. Eccles, Jr.
Melvyn J. Estrin
Joseph L. Fisher
Frances Garcia
Frederick G. Harmon
Jonathan Hawley
Lenneal J. Henderson, Jr.
*Robert Jordan
Anne Firth Murray
Laura Olson
Martha Phillips
Jonas Edward Salk
Vivien H. Walton
Bennetta B. Washington

Robert P. Worrall, *President Emeritus*
Conrad Taeuber, *Chairman Emeritus and Demographic Consultant*

Advisory Committee

Samuel Baum
Calvin L. Beale
Donald J. Bogue
Lester R. Brown
Philander P. Claxton, Jr.
Caroline S. Cochran
Mercedes B. Concepcion
Douglas Ensminger
Philip M. Hauser
Carl A. Huether
Jose Ruben Jara
Sam Keeny
Richard K. Manoff
M. A. Sattar
Benjamin Viel
Sloan R. Wayland

*Members of the Executive Committee of the Board of Trustees

The Population Reference Bureau is a private, nonprofit educational organization, founded in 1929. PRB members regularly receive the most vital, up-to-date population information available from the authorities who write PRB's four annual POPULATION BULLETINS; from the lively coverage of the latest news and trends in the monthly news magazine POPULATION TODAY; and from the annually updated WORLD POPULATION DATA SHEET and UNITED STATES POPULATION DATA SHEET wall charts. Educator and library members also receive the population education newsletter INTERCHANGE, four times during the school year, accompanied twice a year by ready-to-use classroom materials.

PRB also publishes the POPULATION TRENDS AND PUBLIC POLICY series, POPULATION BULLETIN POLICY SUPPLEMENTS, four-page EXECUTIVE SUMMARIES outlining the policy implications of current U.S. population trends, and special publications such as the POPULATION HANDBOOK, the STATE DEMOGRAPHICS FOR MARKETING DATA SHEET, and the PRB OCCASIONAL SERIES: THE CARIBBEAN and THE MIDDLE EAST. Write for a listing and prices of publications in print.

For more information, PRB's Information Resource Center responds to population-related inquiries by mail, telephone, or in-person visit. PRB's Demographic Information Service Center (DISC) offers personalized, in-depth data and analyses for individual clients seeking professional interpretation of population trends.

Members of the Population Reference Bureau support an organization that is dedicated to the objective analysis and reporting of one of the world's most compelling concerns.

Population Reference Bureau, Inc.
2213 M Street N.W.
Washington, D.C. 20037
(202) 785-4664